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PENNSYLVANIA GAME NEWS

MAY, 1960

TEN CENTS

THE STORY BEHIND THE COVER

In Nature's way of life, there is a universal law that decrees the survival of the fittest. For the most part, the big and strong eat the weak and small. Predation is normal; each species in the animal kingdom pursues and kills other species which are not as well endowed with size or strength. The major exception is man. With his superior intelligence and physical ability, he has no enemies on this planet except himself.

There are exceptions, of course. The mouse is reported to be capable of stampeding an elephant. A cat occasionally charges a dog and once in awhile, a dog attacks a man. And it is not too uncommon for a 12 inch garter snake to scare the living daylights out of a 112-pound woman.

But one of the most unusual variations in the normal pattern of predation is perfectly portrayed by Don Ray on this month's front cover. Like humans, the skunk has very few enemies. He is small, comparatively stupid, and not overly endowed with alertness or strength. This is especially noticeable when you consider other members of his family. The marten is extremely swift and nimble as he streaks through the tree tops catching squirrels, which make up the main portion of his diet. And fishers are even more agile, for they catch and eat martens. The wolverine is extremely bloodthirsty; badgers are courageous fighters; minks show considerable intelligence; and weasels are well known for their cunning and stealth.

Skunks, however, have been the slow-pokes down through the ages. Nature gave them a built-in defense that is almost fool-proof. Most birds and animals, not to mention generations of country boys, have discovered to their extreme regret that skunks are best left alone. But late at night, when skunks are ambling along moonlit paths in search of grubs, beetles, mice, chipmunks, eggs, frogs, earthworms or anything else that tickles their tongues, great horned owls are also out in search of food. And if perchance their paths should cross, it is not all unusual that the tiger of the air will attack the stinker of the subterranean. Since the skunks only defense is the discharge of his famous scent, the owl inevitably emerges the victor. We don't know if old Bubo can't smell very good, or if he just doesn't care. But the end result is that there will be one less skunk on earth and one fatter owl in the air.

It is human to hate the predator and sympathize with the prey. But in nature there are no bad predators, only the strong over the weak, the big over the little, the wise over the unintelligent. Thus, most people seeing this cover may have trouble deciding who to cheer for in this battle to the death. Perhaps it will depend on how much you believe in anti-odor campaigns. One thing is sure: the owl may be the predetermined victor but he certainly will smell like his victim for a long time to come.

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IN THIS ISSUE

	Page
Insecticides By Werner O. Nagel	2
The Warbler Month By Ned Smith	13
Calling Reynard By Bernard "Lefty" Kreh	17
Queen Of The Grouse Woods By Marc J. DeBerti	22
White Woman Of The Genesee By Don Neal	25
Review Of Pennsylvania Deer Harvests By M. J. Golden	32
Susquehanna Treasure By Gene Coleman	34
Field Notes	38
Graduation of 10th Student Officer Class	43
Conservation News	46
Exploring Waterways By Ted S. Pettit	53
How To Shoot A Bow By Tom Forbes	59
A Practical Game Shot By Jim Varner	62

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Cover Painting By
G. Don Ray

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Twentieth Century Chemist Have Produced Miracles In Mankind's Age Old War Against Insects. But What Are The Long Range Effects Of Today's . . .

Insecticides

By W. O. Nagel

DOWN at Cyrus Littlebee's the other night, we were at the culinary climax of our afternoon's dove hunt. Cy's braised doves—golden brown in gravy made extra savory with bread-strips fried in country butter—make a man sit close till he has to push back for belly-room.

I waved away Cy's offer of a fresh helping: "Not another bite. I haven't eaten like this since that mess of big bluegills from your neighbor's pond last month."

"Glad you remember them bluegills." Cy poured coffee, "It'll be a while for you eat any more outa that pond."

"He closed it to fishing?"

Cy leaned back, loading roughcut into his battered briar. "He closed it all right—but not by putting up no sign. He jest forgot to tie up his dog." As usual, Cy was dangling seemingly irrelevant bait to make me ask questions. But this time, I had him taking bait, and set the hook.

"I know: he sprayed his dog for ticks, with one of those potent new insecticides—maybe it was too strong for the dog. Anyway the dog jumped in the pond, and next morning all the fish were dead. Don't know how it affected the dog."

I felt a little smug, but he threw the hook like a bass throws a busted plug. "I seen you nosin 'round the chemical company last week, an figgered they'd tell you the story. Figgered you'd bring it up, too. But you was sneakier about it 'n usual—draggin in them bluegills!" He sounded complimentary: honors were about even, and we could get down to business. Cy leaned forward in his chair, and started right in.

"I knowed you had somethin on your mind when you turned down that fifth dove; when you drug in them bluegills, I figgered what it was. But," and he aimed his pipe square between my eyes, "It ain't jest them bluegills as is botherin?"

"No," I acknowledged, "that was kind of an accident—just like when another farmer last summer washed his spray-tank out in a creek and killed all the fish for three miles downstream. Or the pilot who was

unhurt in the crash of a sprayplane, but was dead five hours later from the spray that saturated his clothes."

"Kind of 'I didn't know the gun was loaded' accidents," Cy said, wryly.

"Well—yes; but that isn't my point. What bothers me, besides the deadliness of these insect killers to many living things, is the enormous amounts being used—used by anyone that wants to buy them, with no more controls or restrictions on how and where they're used than whatever it might say on the label."

"Or how well a man usin 'em follers what it says on the label," Cy corrected me. "But you ain't sayin them insecticides ain't got a rightful use, nor that all are harmful to human or wildlife, nor that any person as has need of em, shouldn't be able to get em?"

"I certainly am not. But a lot of people are saying just that, and that such powerful chemicals shouldn't be on the open market, when poison a lot less dangerous is tied up in strong laws and prescriptions."

"On the other hand," Cy put in, "We're growin more and more crops an livestock on less an less land, to feed an furnish more'n more folks—an insects is the one big handicap to doin that. Them chemicals is the first effective way we ever had of fightin insects on a big scale—an yet, if they ain't used right, they can kill fish, wildlife and pets—and some of em's real rough on humans, too." He emphasized his words with a jabbing pipestem. "We gotta use bug-killers to produce the stuff folks needs; yet, if they ain't used right, that food an protection could cost us a sight more'n we want to pay!"

"That," I acknowledged, "is the problem. And also it's the newest big problem in human life, too, with a lot of strong opinions on it. This could work up to a pretty big fight—in fact, it already has."

"Far as I know, fightin never settled the right nor wrong of anythin," Cy grunted. "Reasonin the thing out jest might. Why don't you write a piece about it?"

"That's a tall order, Cy." I got up and headed for the door. "Might take a shot at it, if only to set my own thinking straight."

"Which ain't no bad idee, no time!" was Cy's parting shot.

We've all got a double stake in the insecticide controversy; our personal special interests, and the single overall interest of what's best for everyone. The two aren't often the same, and special interests may differ sharply. That's the root of the controversy. But as Cy said: "fightin never settled anything, reasonin jest might." Let's try "reasonin" the problem out.

Insecticides, of course, are nothing new: arsenic, tobacco, pyrethrum, and other materials were in use more than 150 years ago. But really effective insecticides weren't developed or used on a large scale until the advent of Paris green in the late 1800's, and things didn't really get going until DDT was made available for agricultural use in 1945. Like the "miracle drugs" it was hailed as the miracle insecticide, and it very nearly was. Since then the development of chlorinated hydrocarbon and organophosphate insecticides has boomed until now, according to Julius Anderson of Missouri's Department of Agriculture, about 530 companies are manu-

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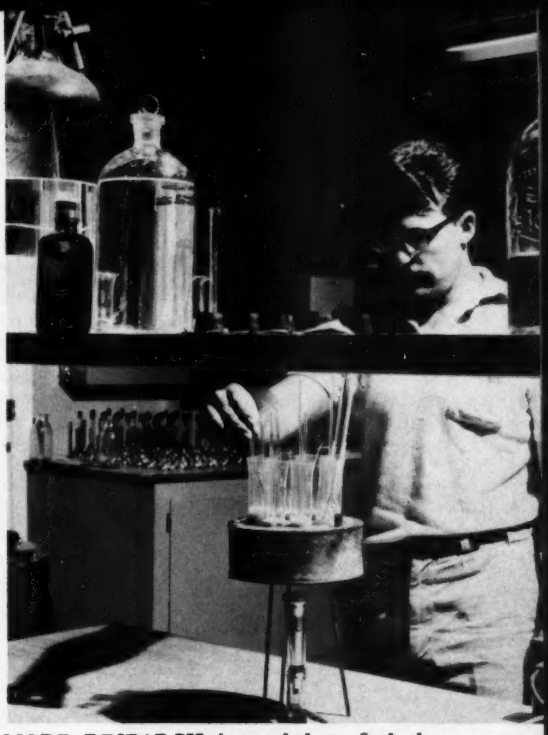
facturing or packaging these highly potent products under 5,000 different labels.

And their use has boomed accordingly. According to the U. S. Department of Interior, the wholesale value of such chemicals used in 1956 was $290 million, and USDI predicts that by 1975 the annual value will reach a billion. They state that one-sixth of all croplands; plus millions of acres of forest, range, and marshlands, are treated annually. By no means all these applications kill fish or wildlife, but some of them do. And local kills are sometimes severe enough to suggest that the potential kill of beneficial life could be enormous.

Nobody objects to the pest-killing properties of these compounds: most of the objections result from the incidents of poisoning fish and wildlife, of killing beneficial insects, and of known or suspected harm to humans. For example, it's widely believed that DDT residues in canned and fresh vegetables and cow's milk are not passed off by the human body, but are built up and cause the mysterious "Virus X" disease, a digestive disturbance. Some physicians are beginning to suspect that DDT and others may cause or contribute to leukemia, hepatitis and other degenerative diseases. A recent issue of Science Service, Washington, D. C., quotes the National Office of Vital Statistics as reporting 61 human deaths from pesticides in 1957. The same office states the organic phosphates are most harmful—a few drops will kill a man, and are easily absorbed through the skin. Prompt, thorough washing with soap and water is said to be effective protection.

It is not always easy to identify a pesticide as the killer. There are a good many reports every year, verified and not, of illnesses caused from contact with, breathing, or swallowing various insecticides. We don't know



MORE RESEARCH is needed to find the facts about modern insecticides. It isn't enough to know an insecticide will kill insects—you have to know what else it might damage, too.

the full truth: either it isn't known, or it isn't made public—we suspect both. The point is, the missing facts should be found out before the product is released, and the facts should be made public. People do a much better job of avoiding dangers when they know what the dangers are.

The case histories of fish and wildlife destruction are much more definite, even though the extent of kill and of other suspected damage (like sterility) is not positively known. Destruction of aquatic life (fish, crabs, shrimp, etc.) in waters sprayed directly or poisoned by run-off from sprayed lands has been the most extensive (or most easily detected) but kills of small game and songbirds (either direct or from feeding on poisoned insects; earthworms, etc.) are reported every year.

Wildlife administrators, sportsmen, and others have been objecting strongly to wide-spread use of insecti-

BROADCAST SPRAYING of insecticides is causing most of the damage. But when insects are damaging large areas, the only effective, economical treatment is spraying or dusting from the air.

cides without adequate controls. They insist that just the amount of fish and wildlife killed of which they have actual records is entirely too high to justify continued use without more information on potential damage than we now have. And they know that the official records show just part of the kill. They often state that indiscriminate broadcasting of the insecticides, rather than the more controllable and effective spot-control methods, is causing most of the damage.

Defenders of the broadcasting methods, on the other hand, point out that when insects are damaging large areas (like a forest, for example) the only effective, economical treatment is by spraying or dusting with planes. And that's true, also.

So far the opposing forces haven't got together, but the fracas has had one good result—recognition that it isn't enough to know an insecticide will kill insects; you have to know what else it might damage, too. This has moved Congress to appropriate money for more research (not nearly enough, but it's a start) to find the needed facts. There had been some research and some directions for safe use had been issued, but knowledge was not sufficient and precautions were either incomplete or (often) ignored. But perhaps the arguments have taught us that the more powerful an insecticide, the more thorough our knowledge must be and the more positive our controls.

But contamination of foods and kills of wildlife by an individual application are not the only problems raised by new insecticides. There's strong evidence that some of them, even if used at a "safe" rate in each application, may accumulate in the soil till the "safe" rate is exceeded, and then damage life other than insects. There's also evidence to show that they don't. Confusingly, chemicals sometimes don't; sometimes they

do not remain effective long in the soil, and sometimes they do; sometimes they damage other life, and sometimes they don't. We need to know what to expect of any potent insecticide under a given set of conditions, and how to avoid unwanted damages.

Whenever a powerful tool of any kind is made available freely to the public, it is both practically and morally mandatory to pass along with it the straightforward facts about it. Regarding insecticides, either the knowledge of their potential or the passing on of that knowledge to the users is inadequate or incomplete.

The problem we face stems partly from the poisonous nature of the most effective pesticides and the known and unknown dangers in their use. Partly, however, it's due to the fact that other interests are bound to be affected, constructively or adversely, by the widespread use of poison without adequate directions or controls.

And, finally, there's always human carelessness: people do not always read labels, follow instructions, or observe cautions. When you put power in the hands of people the matter of whether that power is used destructively or constructively is mainly in the mind of the user. That's true of any tool—matches, machinery or pesticides. As Cy's Uncle Ott used to say: "A man with a axe can cut off his foot as well's a tree—it all depends on what he aims to do, an how good his aim is."

Knowing just part of the truth can be more frightening than complete ignorance. It's true that as little as one part of dieldrin to 3,000 parts of water will kill fish, but it's also true that one match can destroy enough timber to make matchsticks for the entire country for a year. It's true that pesticides have killed wild-

APPLICATION OF FERTILIZER to farm ponds is an accepted and good practice. Use of some chemicals designed to rid ponds of algae and weed growth, however, may result in fish kills and contamination of streams far below the pond banks.

life and injured or killed livestock and humans—but axes have cut off human feet. It's true, that medicines and drugs available only on prescription, developed to ease ills and save lives, can also cause disorders and take lives.

All in all, it's true that almost every device man has invented to enrich or advance human welfare can also make life hazardous. All have been the subject of controversy, many still are: insecticides are the latest of these devices (except for nuclear fission) and are the hottest subject right now in the wildlife field.

And they should be—until we know the complete truth about them. Americans have a way of rushing into wholesale use of what looks like a good thing before they know all they should about it. The temptation was especially strong with insecticides: when man first started growing his own food, he started a war that has grown in bitterness—a war of competition with insects that throve on the new food.

Add insect damage to timberlands, carriers of disease, and "bugs" that bite, sting or burrow, and no wonder that many economists say insects—not other nations—are the most serious threat to our survival. Pesticides are our most effective weapon in this grim struggle. There is little doubt that we must have these insecticides, to fight disease and produce the food and fiber we need for our growing population.

There is no logic, therefore, in the contention that insecticides should not be used because "they can be a menace to wildlife and even human life"—no more logic than there is in abolishing axes, miracle drugs, or matches. If this controversy is to be resolved at all, it must be on the basis of universal acceptance that the insecticides, like other tools, are here to stay: they're going to be used because we have to use them.

But that's not all the facts: we have to face up to the truth that insecticides are almost incredibly powerful poisons that can cause a whale of a lot of damage if misused. At the extreme of misuse, they can cause far more damage than they prevent, in terms of public good.

It's a matter of knowing thoroughly the full capabilities of these powerful tools—capabilities for harm as well as good—and then applying that knowledge to secure the most good with the least harm. Probably it's impossible to avoid all harm—we never have, with any tool. We can hardly imagine doing without fire or automative transportation, yet these are instruments of injury—sometimes tremendous destruction—to property, life, and natural resources.

It seems that man has not learned how to climb the stairs called "high standards of living" without paying a price for every step. Consider the three really basic human needs: air, water and food. In the constant struggle to "better" our social and economic position we've also poisoned, increasingly, these three basic needs of life.

It began with water. Concentrating along the rivers because they afforded transportation and fertile bottomlands in addition to water, we promptly began poisoning them with our pollution—agricultural, industrial, and human. For each advance in economic progress we paid penalties: disease, loss of soil fertility and expensive replacement of it, loss of wildlife and expensive partial replacements of it, loss of water quality as well as quantity and expensive treatments (only partially successful) to restore its usability.

Air was next: dust raised by winds from cover-stripped farmlands, chemical "smogs" from the chimneys of industry and the exhausts of machines, and finally, radioactive particles from nuclear fission—we pay the price for progress in discomfort and ill health increasingly as we pollute the very air we breathe.

And now food. As the chemicals we use to protect our food from insects become more effective, more widely used, it becomes increasingly difficult to remove all traces of them from food before we eat it. As the insecticides become more potent, swallowing tiny amounts becomes more hazardous. It becomes increasingly probable that in the very food we eat, we may pay a price of self-poisoning for progress. Perhaps this is partly because, too often, we adopt a tool before we understand all the probable results of its use; partly because we overuse the tools, to secure luxuries as well as necessities. Certainly, it's partly because of carelessness—and partly because we're blinded to the consequences by the glitter of cash profits.

FOREST AREAS by the millions of acres as well as one-sixth of all cropland in the United States are treated annually. Not all applications of pesticides kill fish and wildlife, but some of them do.

No matter how we look at any of these "prices of progress" we come back to the same conclusion: Prices can be too high!

But there's an alternate conclusion: Prices don't have to be too high. We can avoid too-high prices by viewing the tools of progress objectively. We can view insecticides objectively only if we regard them as one of these tools, and examine them in relation to other tools. They gain, in some respects, by such examination. Compared to some of our other tools, insecticides have a comparatively clean bill in carrying cautions against misuse. I have bought several axes and automobiles; none was labeled "dangerous if not used according to instructions." Yet axes and automobiles have damaged humans and wildlife (directly and indirectly) about as effectively as any tools we've devised, certainly more than have all the insecticides applied to date.

Insecticide containers at least carry labels. However, some of these say the instructions are based on data whose "accuracy is not vouched for," or that "no warranty is expressed or implied for the results of using the product." This is about as cagey as you can get. On checking a sample of the different labels, it was clear that some carry better directions for use (and caution against misuse) than others. For example, of 20 labels on that many different (in name) insecticides, all extremely deadly to fish in incredibly small amounts, to game if put in the wrong places, and to men if carelessly used, three carried this caution: "To protect fish and wildlife, do not contaminate streams, lakes or ponds with spray or washings from spray tank." Several cautioned against use around

fish ponds, but did not mention game or songbirds. However the one used on the dog which swam in a pond, killing all the fish, cautioned only about dangers to pets and humans! None told how to avoid killing beneficial life like bees, earthworms, or ladybugs.

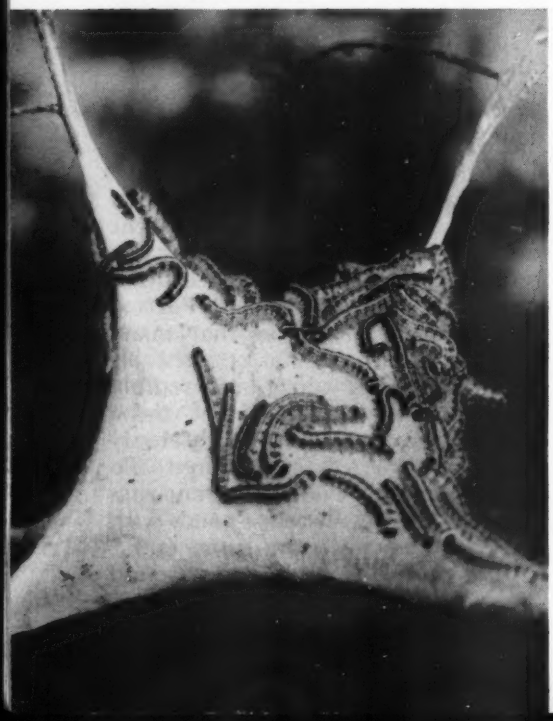
The pet-and-human caution was on most labels, game on only two, and fish on four. Most insecticides poisonous to humans also had a safety factor (dilution or other) in addition to the caution on the label; but in conscientious effort to avoid damage to wildlife, only two labels were adequate.

These two manufacturers didn't have to include this caution. Labels must be approved by the U. S. Department of Agriculture, and (in Missouri) by the State Department of Agriculture, but cautions about wildlife are not required by law. In my opinion, this is a serious legal defect.

An adequate labeling law, requiring cautions about damage to humans, pets, livestock and wildlife, should also provide that all labels on compounds toxic to humans carry the familiar skull-and-crossbones sign that shout "Poison!" People treat this sign with respect—and really read the label. On insecticides poisonous to fish and game a dead quail or fish could be sketched.

Manufacturers and distributors may object that this sign would discourage use. It might, indeed, discourage the use shown by one group who put 40 pounds of DDT per acre on their lands, when 2 pounds would have been adequate. But safe, prescribed usage—and therefore sales—would hardly be depressed: the "poison" label has not discouraged the popularity of iodine or carbolic acid. Distributors I've talked with agreed on one essential point: the current controversy, with its rash of charges and countercharges, has got the public so uncertain about insecticides values and dangers that sales are noticeably depressed. People who might be using insecticides correctly and safely are afraid of them, not because they know they're dangerous, but because the arguments are so contradictory they can't figure out the truth. It's the uncertainty about danger, not the clear knowledge of it, that's depressing sales.

TENT CATERPILLARS are a favorite target of spraying. Pesticides are our most effective weapon in the grim struggle against such insects. Many economists say insects, not other nations, are the most serious threat to our survival.



But facts in proper perspective aren't available or haven't been released in convincing form. That's not to say research hasn't been done: according to Dr. George C. Decker, Illinois entomologist—"With the exception of some widely used drugs, it is doubtful if any chemicals in use today have been subjected to such close taxicological scrutiny as have the insecticides." But, as Dr. Decker also points out, laboratory research and small-scale tests aren't enough. They aren't enough, certainly, to determine the effects on wildlife of large-scale usage. From the conservationist's viewpoint, it's in this field that more information is needed, and

such investigations have been indorsed by Department of Interior, with financing provided by Congress. The financing is still completely inadequate, but a start has been made, and with increasing demand for more facts the grants should increase. In addition, some manufacturers are cooperating with wildlife, forestry, and agricultural agencies in experiments to learn more about safe effective use of their products. More of them will probably do this in the future.

That's what it is going to take to produce the facts which will help insure the proper use of the insecticides; to restore our confidence in using them as necessary to protect crops and humans from insect damage and diseases, without harm to other desirable life. Beyond proper labeling, agricultural and wildlife agencies, Departments of Health and insecticide distributors should advise on proper usage. Certainly large-scale insect eradication programs should be carried out only under the direction of competent, informed supervision—including supervision to protect wildlife.

Insecticides will and must be used, but they should be used to secure greatest possible benefits with least possible harm. This cannot be done by ignorance nor can the problem be settled by argument: it can be done facing the facts available, securing facts still unknown, and then putting the knowledge to use in the best public interest.

Cy put down the last page, leaned back and stared into space.

"Well?" I demanded, "Did I cover the subject fairly?"

"Considerin you had to leave out a lot of details, I reckon you got it pretty well covered," he admitted. "You coulda hit a mite stronger on everybody tryin to see the other feller's side of it."

"O. K. Anything else?"

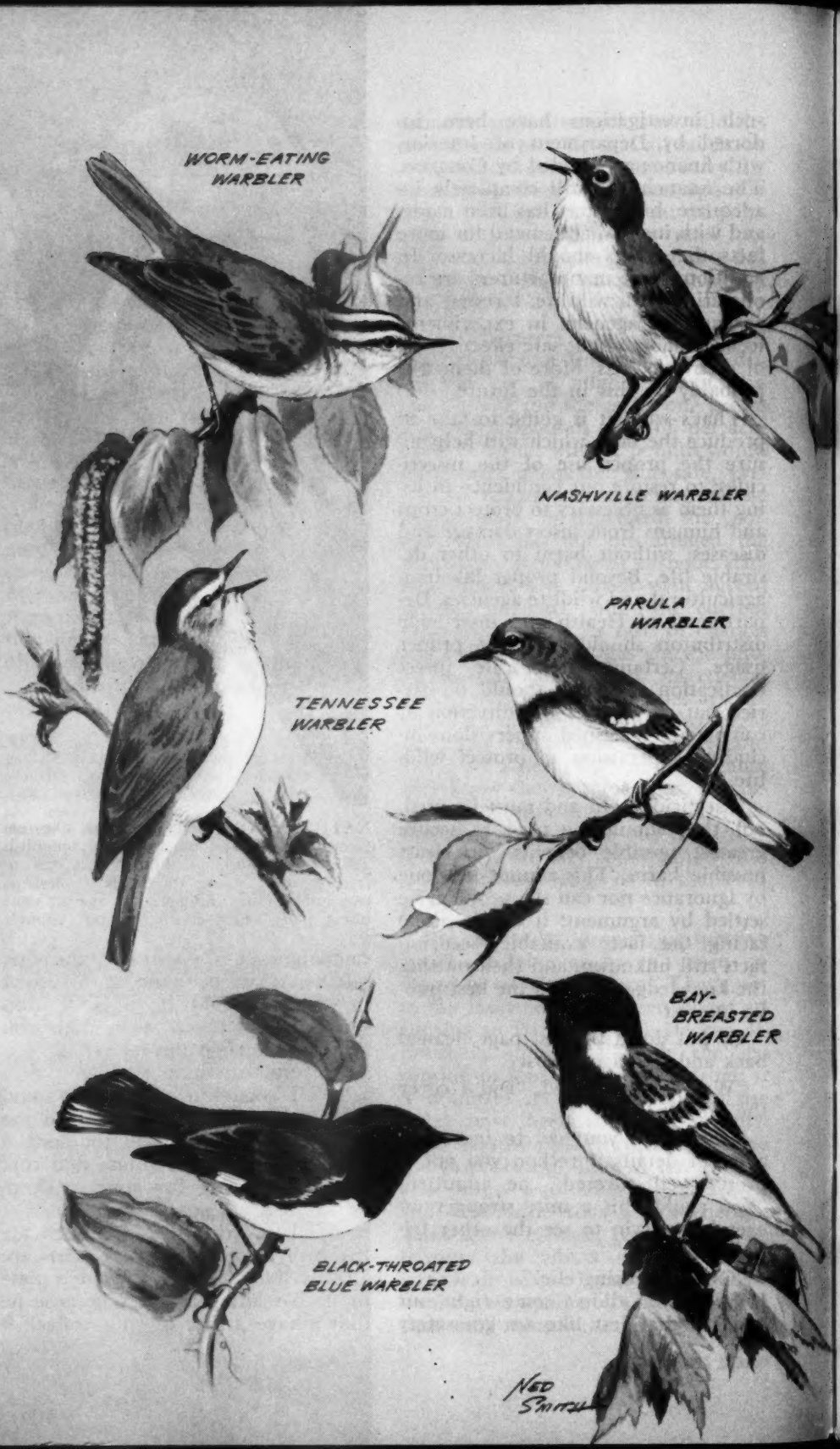
"Well, you didn't come right out and say that jest like we got safety campaigns on the use of guns, fire, safe drivin an such, one on the use of insecticides might be a good idee. You suggest about that, but you didn't come right out an say it."

"Agreed. Anything else?"

"Well—somethin Uncle Ott said one time about people as talked too long. 'A feller as makes too long a speech,' Ott said, 'is gonna find that half his audience has gone to sleep, an the rest has gone home.' "

"Well," I grinned as I pushed my cup over for a refill, "the readers are already home, and if anybody's gone to sleep reading this, it's because he didn't have a shot of your coffee!" ■

NATURAL CONTROL of insects, like tent caterpillars, is best portrayed by songbirds (like this eastern bluebird). They eat or feed to their young thousands of destructive insects every summer. But against some insect pests, their efforts are not enough.


WORM-EATING WARBLER
NASHVILLE WARBLER
PARULA WARBLER
TENNESSEE WARBLER
BAY-BREASTED WARBLER
BLACK-THROATED BLUE WARBLER
NED SMITH

WALKIN' SHOES

By NED SMITH

The Warbler Month

1. **Wood warblers are medium sized birds between seven and nine inches long. True or false?**
2. **Why is the name "water-thrush" a misnomer?**
3. **What warbler wears a necklace of black spots?**
4. **Of all the species of warblers appearing in Pennsylvania only one-fourth nest in this state. True or false?**
5. **What warbler is frequently mistaken for a vireo?**
6. **Why was the prairie warbler so-named?**
7. **What black and white warbler has a fiery orange head?**
8. **The black-polled warbler is a very late migrant. True or false?**

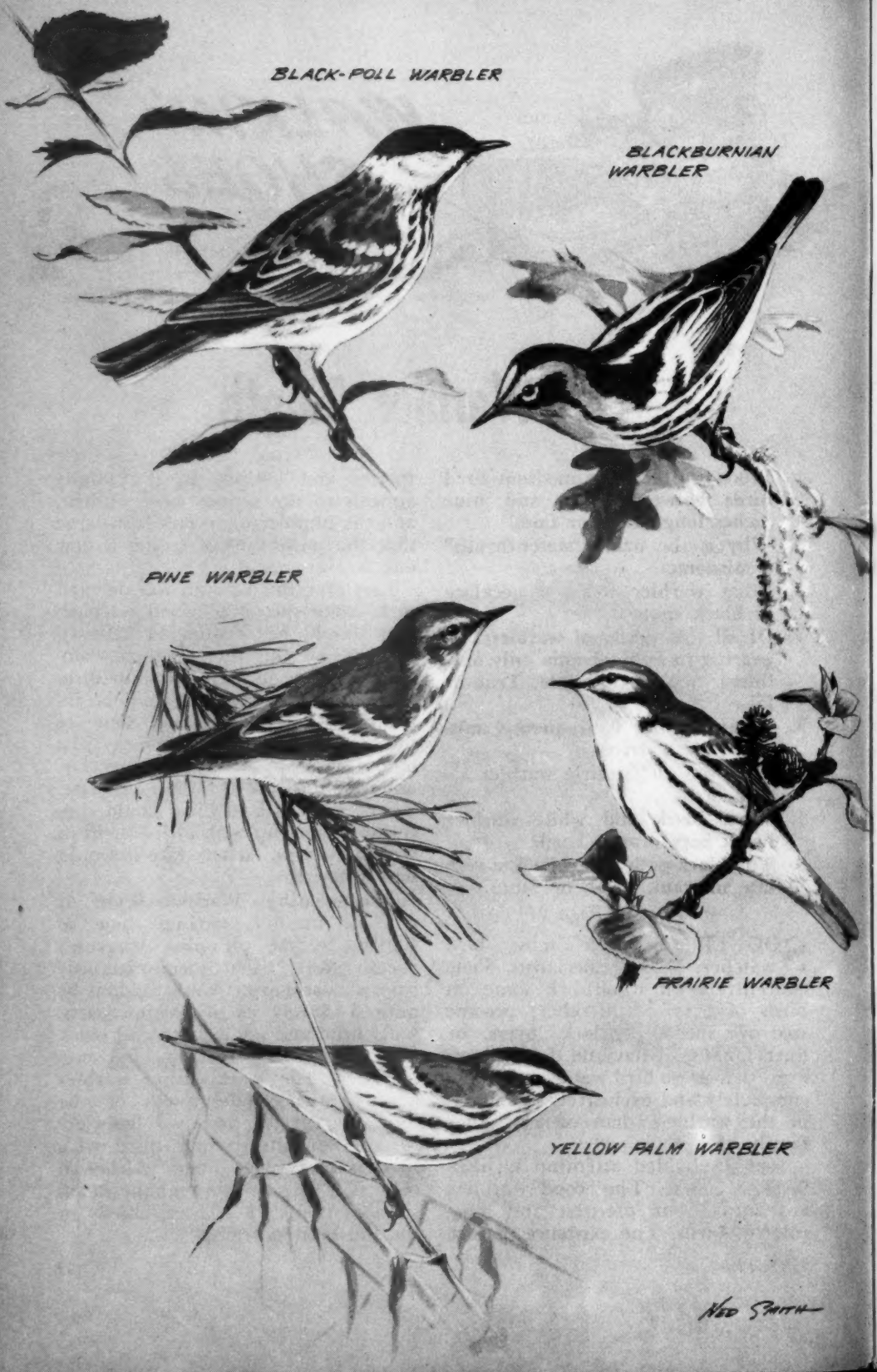
(Answers on Page 24)

SOONER or later most bird watchers become specialists. Some concentrate on waterfowl, some on birds of prey, while others become sparrow specialists, lark lovers, or finch fanatics. I have no doubt, however, that more bird watchers become completely and exclusively enamored of the warblers than of any other family of birds.

Such undivided attention is justified, of course. The wood warblers are among our prettiest and most colorful birds. The existence of rare species and hybrids in the family appeals to the serious bird student, and the number of species is so large that the possibility of seeing a new one is everpresent.

Last May this column was devoted to a dozen species of wood warblers that should be familiar to Pennsylvanians, all but one of them commonly nesting in the Commonwealth. In this month's column you'll be introduced to thirteen more. Some of these thirteen nest in Pennsylvania, others are seen only as migrants, but none could be called rare in our state. The ambitious bird hiker could conceivably meet up with all of them in a single season. At any rate it would be fun trying.

1. **Worm-eating Warbler**—Were it not for its dry, rattling song, so similar to the chipping sparrow's vocal efforts, the inconspicuously colored worm-eater would seldom be noticed. Surely its olive upperparts, buffy head and underparts, and black head stripes are anything but eye-catching. The worm-eating warbler haunts forest undergrowth or the ground itself. Its nest is a leafy depression on the ground lined with rootlets and plant fibers. Although seen as a migrant throughout Pennsylvania it does nest here, chiefly in the southern portions.


BLACK-POLL WARBLER
BLACKBURNIAN WARBLER
PINE WARBLER
PRAIRIE WARBLER
YELLOW PALM WARBLER
NED SMITH

2. **Nashville Warbler**—Abundant in migration, this small warbler nests in limited numbers in northern Pennsylvania and at high altitudes farther south. Its head is blue-gray, with a concealed rusty crown patch and conspicuous white eye ring. The rest of the upperparts are olive, the throat and other underparts yellow. The Nashville warbler sings a two-part song, beginning with a series of *see-whits* and suddenly breaking into a rapid chipping trill.

3. **Tennessee Warbler**—Surely, one would think, two warblers with the names "Nashville" and "Tennessee" must have something in common, and they do. Their songs are strikingly similar—although the latter's performance is louder and more persistent than the other's. The Tennessee Warbler is a plain olive bird with a conspicuous white stripe over the eye and a gray crown. The underparts are white. Aside from its slender bill this bird looks astonishingly like certain vireos. It is a migrant in Pennsylvania.

4. **Parula**—The Parula is unmistakeable. Its upperparts are grayish blue, marked with a white eye ring, two white wing bars, and an indistinct greenish patch on the back. The throat and breast are yellow. On the male the breast is crossed by a dark band. Without a doubt, the best way to locate the male in May is by his buzzy song, an ascending "ze-e-e-e-e-up" that can be heard at a considerable distance. This bird nests in scattered parts of the state.

5. **Black-throated Blue Warbler**—The male's grayish-blue upperparts, black cheeks, throat, chest and sides provide immediate identification, but the female's plumage is not so distinctive. She is dull olive brown above and buffy below. Most females have a small white spot at the base of the primary wing feathers. Look for these birds in dense undergrowth. They breed in the mountainous sections of the state, generally placing their nests in rhododendron or similar cover.

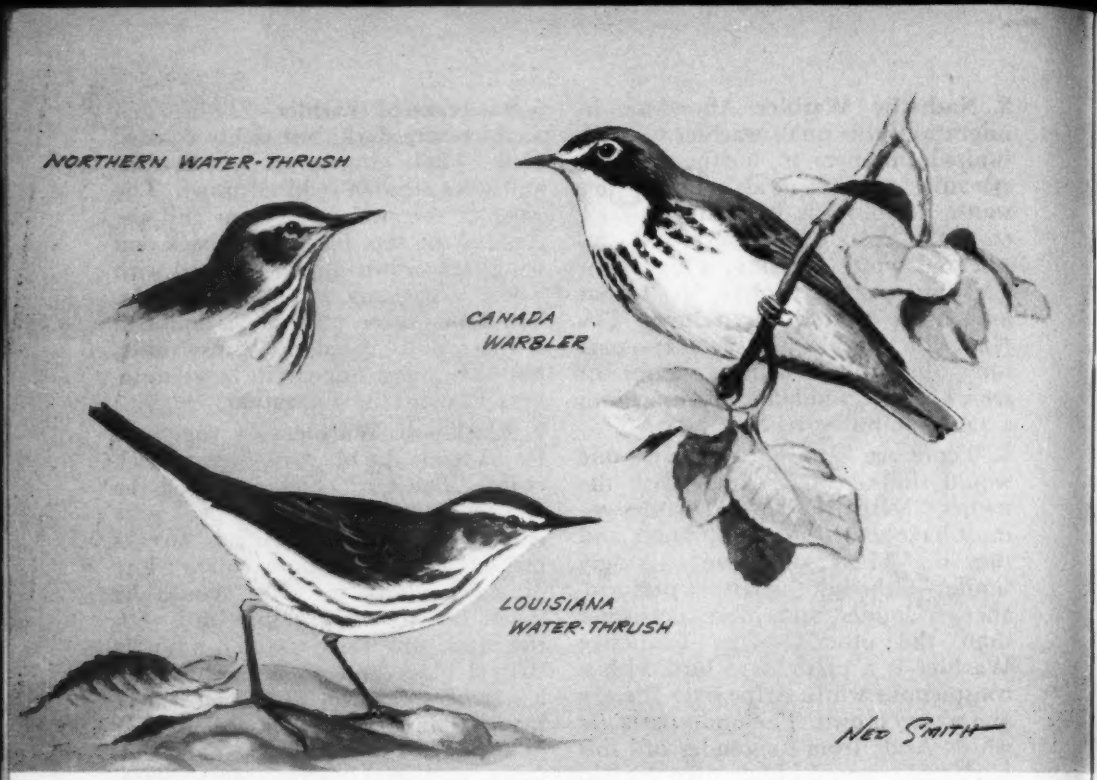
6. **Bay-breasted Warbler**—Bay-breasted warblers are dark, but richly colored birds. Their crowns, throats, breasts, and sides are rich reddish brown. The sides of the neck are cream and the sides of the face black. The back and wings are brownish gray marked with white wing bars and black streaks. The females are paler. It is doubtful if these birds breed in Pennsylvania, but they often appear in large numbers late in the migration.

7. **Black-poll Warbler**—As suggested by his name the black-poll has a black crown. The face patch is white, the rest of the upperparts are gray streaked with black. Black streaks mark the otherwise immaculate white of the underparts. Care should be taken not to confuse this bird with the black and white warbler, a boldly striped black and white species with a *streaked* crown and *black* face patch. The female black-poll is olive above streaked with black, paler and more yellowish below. The black-poll is a very late migrant.

8. **Blackburnian Warbler**—One of the most beautiful of the wood warblers is the Blackburnian. Its plumage is chiefly black and white, but on the head and neck the white is replaced with the most intense orange imaginable. The female is paler in coloration, but otherwise very similar. Although a few of these birds nest in the northern hemlock forests of Pennsylvania most of those we see are migrating to breeding grounds farther north.

9. **Pine Warbler**—There's nothing extraordinary about the pine warbler. Its upperparts are dull olive green, its underparts dull yellow, faintly streaked with dusky. The dusky wing feathers are edged in whitish and crossed with two white bars. The female is paler. This bird nests in pine forests in the mountains of Pennsylvania, particularly in the southern part of the state.

10. **Yellow Palm Warbler**—This early bird among migrants is not known to



nest in Pennsylvania. Its crown is bright reddish brown, the rest of the upperparts olive. A line above the eye and the entire underside are yellow. The breast and sides are streaked with reddish brown. A subspecies, the western palm warbler, has generally paler underparts, streaked with dusky.

11. **Prairie Warbler**—Unlike most wood warblers this bird prefers brushy fields to forests. It rarely nests in Pennsylvania, but appears here in migration. Its plumage is olive above, obscurely streaked with reddish brown on the back. The face and underparts are yellow. Distinctive field marks are the two black facial stripes, one through the eye and the other through the cheek. The female is similar but duller.

12. **Louisiana Water-Thrush**—You'll likely meet this bird along the mountain streams where it nests, stepping daintily over the ground in rhythm with its curiously pumping tail or making the forests ring with song. The upperparts are plain olive brown. The underparts are white, lightly tinged with buffy and streaked with black. The throat is unmarked. A near relative, the Northern Water-Thrush, has yellowish underparts. Its throat is streaked with blackish. In Pennsylvania the Northern Water Thrush nests only in the northern mountainous areas.

13. **Canada Warbler**—So many of the warblers keep to the tree-tops in migration that it's a treat to the bird watcher's stiff neck when a bush-frequenting bird like the Canada Warbler comes along. Aside from its co-operative habits the Canada is also a treat to the eye. Its upperparts are gray, the crown mottled with black. A line from the bill to the eye, the eye ring, and the underparts are a rich yellow. A necklace of black spots is draped across the breast. The female is paler, the necklace usually represented by faint dusky marks. Though it does nest in the mountainous parts of the state, the Canada Warbler is generally seen only in migration. ■

For The Finest In Outdoor Thrills And Suspense, Try . . .

Calling Reynard

By Bernard "Lefty" Kreh

THE shrill notes of the call die in the rustling leaves. You wait—tense, ears and eyes alert—for him to come. You almost pray the old fox will show on the ancient log road rambling under the trees in front of you.

He does come, moving silently among the bushes like a scouting Indian, as he eases along, searching for the rabbit heard giving its dying cries.

Slowly and silently, you cup your hand around the call and give a few short, weak yelps. Instantly the fox turns and moves toward you—you raise the gun to shoot. But the sun glinting on the barrel siganls him and he disappears in a flash.

Even though you didn't get him, you had enough hunting thrills to last for a long time. You'll relive that hunt next winter when you're loafing at home.

This is fox calling and it takes as much skill as many other types

FOX AND CROW CALLS, left and right, will both bring foxes on the run. Crow calls are effective in early May when young crows are constantly falling out of the nest and into the mouths of the hungry fox.

of calling where game is lured to the gun. Like anything else there is a right way to do it.

Equipment

My first attempts to call foxes were haphazard at best. I simply went into an area where I knew foxes lived and sat down. Blowing on the call in what I thought were the dying squeeks of a rabbit, I half-expected to see Reynard come charging toward me.

I've since changed my tactics and added more than a call to my fox hunting gear.

Everyone who does much hunting knows about camouflage clothing and the value of using it when after any sharp-eyed game. It goes without saying that a camouflage suit, or at least clothing that blends with surrounding vegetation, is essential to success.

Face Mask

But most hunters forget about the face mask. This can be made several different ways and is invaluable. Not only for foxes but geese, ducks, deer, turkey and other animals and birds of keen sight. Infantrymen in the last war were warned never to look at a passing airplane. Their faces reflected light like a mirror and warned the pilot overhead. The same thing occurs when game is moving into you and your face is unprotected. The slightest movement on your part, is a signal to it.

One of the easiest, practical face masks can be made from some green, or tan mosquito netting sewed on a baseball cap. Two eyeholes can be cut in it for better visability, or the netting can be sewed on in such a manner that it drapes beneath the hat brim and across the nose, leaving

the eyes clear.

Face paint that is put out by several national archery manufacturers is good too. This helps prevent chapping in bad weather as the paint gives the face a protective coating against the cold. A good trick to use in removing this face paint is to carry a little of the woman's cleasing cream, in a small jar or plastic container.

What else?

A good call is important but despite the advertisements, some do not work as well as others. One made in Texas has been especially good for me. The call should be suspended by a string around your neck. This allows you to drop the call and shoot on a moment's notice—and yet you know it's within immediate reach if needed, should the fox turn away from you on his way in.

The gun is a problem. A 22 is a little on the light side unless a sure shot can be made and this takes some nifty sighting on the riflemen's part.

The 12 gauge, loaded with the new short magnums does a fine job. The 16 and 20 can be used too, but shots longer than 35 yards should not be taken with these lighter gauges. Best size shots to use is 5's, or if using a 20 gauge, number six.

A sponge rubber kneeling pad, like mother uses for scrubbing floors, is a good investment. If you know foxes are in the area but are slow working toward you, then your stay will be longer. An absolute motionless attitude is necessary when a fox is approaching. One slight movement and he's gone.

Sitting on the light sponge pad is comfortable and if a wait becomes necessary it's not too hard to do. I remember one time when I was calling foxes along Marsh Creek. Kneeling under some hemlocks on a knoll overlooking the Gettysburg battlefield, I started calling. Two crows swooped in immediately but I ignored them.

I saw a fox ease out of a honeysuckle thicket on my left and I slowly turned to face him. The noisy crows bothered him and I could see he was nervous. He moved into another patch of weeds as he worked toward me. I knelt motionless. The crows soon stopped calling and the woods grew quiet—I waited.

Five minutes later I decided the fox must have seen my movement. My knee was aching from the small stones that felt as if they were drilling into it. I looked around care-

FACE MASK allows the hunter to remain unseen and covers the hand holding the call. Masks can be improvised from old nylon curtains, dyed with commerical tinting compounds available at any five-and-ten store.

"LEFTY" KREH is an outdoor writer from Frederick, Maryland who hunts foxes and crows year-round. He writes for several weekly newspapers, is active in the Mason-Dixon Outdoor Writers Association and is an outstanding angler as well as hunter.

fully and saw nothing. Standing up painfully I was amazed to see the fox sprint from behind me into the thick brush. He had come up on me as silently as a mouse walking on cotton.

My uncomfortable position had forced me to move—thus losing what I'm positive would have been a sure shot. Since that time I have carried the sponge pad. Small and light it can be slipped into the game pocket of your hunting coat or carried under the arm.

Field glasses are forbidden. Foxes are usually called from thick cover or woodlots. Field glasses aren't needed for this close-up work and the lenses reflect light.

Where to hunt

In order to call foxes, one factor must be present at all times. There must be foxes in the vicinity. It's surprising how many hunters go in a woods and blow on a call. They expect a fox to trot in—yet they never checked to see if any were in the neighborhood.

A little info about the red and gray should be known. The gray is more of a "thicket animal." He likes woodlots, dense cover, fencerows full of honey suckle, a mountain side with rhododendron and honey suckle.

The red is just the opposite, although each species will be found to some degree in the other's baliwick. Red foxes often take up housekeeping in and old log or groundhog den in an open area. Usually, body hairs from the animal can be seen clinging to the dens. Another method of determining whether foxes live there, is to check for kills. Chicken and birds feathers, pieces of rabbit hide and parts of their favorite summer food, the groundhog, are often lying around the den entrance.

If a fox stays on a farmer's land, he'll usually know about it and where it stays. He will almost be glad to tell you where the dens are and the fox's habits.

With all these locating methods, and others, and the numbers of foxes existing in Pennsylvania, the hunter should have little trouble finding an area to call, in which he knows foxes exist.

The fox has a keen sense of hearing and smell. It is wise to approach your calling spot against the wind. Don't slam car doors, talk loudly or make unnecessary noises moving into positions.

Always try to get on a spot of ground fairly clear in all direction to aid you in shooting. If possible, select a place higher than the surrounding area. A fox can be spotted better and the sound not pin-pointed by the animal as quickly, if the caller is slightly above it. Call from a shaded spot.

Wait a few minutes after arriving in position before you start calling. It gives the wildlife in the area time to settle down and increases your chances for a shot.

Call softly at first. Many times a fox will be close by. Soft calling will bring him trotting in but a blasting call would drive him away. Call fairly continuously, stopping every two or three minutes for a short duration, then begin calling again.

If nothing appears in a short time—say two or three minutes—try raising the volume of the call. After eight or ten minutes I find it best to leave if no fox has moved in. Only on rare occasions have I had foxes come to me if I stayed longer than ten minutes. Watch carefully as you leave the area. Sometimes a fox who was slow coming to the call will be seen sneaking away.

If you shoot a rifle, or even a shotgun, here's a good idea to insure excellent shots. In an area where you feel the fox will travel to the call—such as an old game trail, log road, etc.—place a piece of old meat, chicken head, or other fox dessert. The fox, as he moves toward the caller, will stop to investigate the

THICKET ANIMAL is the gray fox. He likes woodlots, dense cover, fencerows full of honeysuckle, a mountain side with rhododendron. He has a keen sense of hearing and smell so approach your calling spot against the wind and don't make unnecessary noise.

food and give the shooter an excellent standing shot. This works particularly well for bowhunters.

Best Times to Hunt

Without question the best times to call foxes are very late in the evening or just after light in the early morning. The fox is a night roamer and he begins to prowl when dark approaches and is usually still about at daylight. If he's had poor hunting luck all night, he's especially likely to come sailing in.

The worst times of course are the hours just before and after mid-day. Hunting all night the fox usually rests and sleeps during this part of the day and is hard to call. I remember a case where we spotted a red fox lying on his den dozing in the early afternoon sun. It looked like a set-up to us. Getting into position in a clump of honeysuckle about 125 yards from the fox, I began to call.

Immediately his head came up and he peered in our direction. Safety's were slipped off and we were sure he was about to come in. A few more calls, in which he seemed interested, and he simply lay his head down again and went back to sleep. We quit hunting and decided that we would hunt no more in the heat of the day.

Young foxes are easier to call than their elders. The best time of the year to bring in these youngsters is late May. Big enough to get into trouble and still not as sharp as the older and more experienced animals, they answer a call readily.

If a half-grown grey or red comes trotting in and you down him with your gun or bow—hang around a few more minutes and continue to call. More than once I've seen two, three, and one time, four young ones come to the same stand. The noise of the gun didn't seem to bother them.

Fox calling is an all-year sport and as much fun as gunning any small game animals. Of all the different types of birds and animals that come to a call, many think learning to use a fox call properly is the easiest to master. ■

Only 26 Champions Have Been Declared in Pennsylvania Grouse Dog Championships. That's Why Orchard Valley Melody Is . . .

Queen of the Grouse Woods

By Marc J. DeBerti

Orchard Valley Melody, a setter bitch owned by Mr. and Mrs. Robert Habgood, Jr., of Bradford, is the new Open Pennsylvania Grouse Dog Champion. This powerful little stylist earned her laurels over the famous "Buzzard Swamp" grouse trial courses located a mere five-minute drive from Marienville last November. Her race, a gruelling two-hour test of stamina, was passed with flying colors. Coupled with excellent ground coverage was a perfectly excuted point on a pair of feeding grouse which gave the large gallery a thrill that does not come to one every day and sometimes only once in a lifetime. The championship won for the 3½-year-old setter a cash purse, plus the highest honor a dog can win in the grouse woods, and a leg on the beautiful sterling silver cup which is held by the winner until such time as it is taken away by some other dog.

The Open Pennsylvania Grouse Dog Championship is a time-tested event, first run way back in 1913. The Pennsylvania Field Trial Club has sponsored the event since that time. It is not an easy prize to win, a fact best attested by the fact that no dog since 1955 has been judged good enough to be declared a champion. The last dog to win that year was Orchard Valley Skylight, setter dog, who incidentally is the sire of the present Champion. Both dogs are owned by the Habgoods.

Everyone likes to see a good and worthy champion declared every year. This adds spice and sparkle to the event. There is no doubt that the Pennsylvania Club would like to see a good champion win this stake regularly but that is not the way it works. When one is dealing with Mother Nature, the wily grouse, weather and many other factors, declaring a worthy champion is not so easy. Since 1913 the stake has been run 49 times and out of this total, only 26 worthy champions have emerged. It's that tough.

Winning important stakes is not anything new to little Melody. As a puppy she won the most important puppy stake of the year, the Grand National Puppy Classic. A few months later she came out on top to win the biggest stake for two-year-old grouse derbies when she literally ran away from the field in the Grand National Grouse Futurity. Melody is still only 3½ years of age and during her first All-age year in 1958, she

placed second in the Venango Grouse Trial All-Age Stake. It is interesting to note that in every stake in which she has been entered, Melody has either won, placed, or been called back for a second series.

Melody was bred at the Orchard Valley Kennels and is purely a product of the Habgood's sound method of producing great grouse dogs. The old adage "like begets like" never rang trurer than in her case. Her sire is Orchard Valley Skylight, a double grouse champion in his own right. Skylight's sire was also a double grouse champion, Sam L's Hadaway, who was owned by Punxsutawney sportsman Sam Light. The sire of Hadaway was the six-time grouse champion, Sam L's Skyhigh, possibly one of the greatest grouse dogs of all time. And of course, Skyhigh's sire was the immortal Sam L's Skyrocket, the fountainhead of the entire Skyrocket dynasty. This is the line breeding of the greatest grouse dogs of our time.

On a clear, crisp November day last fall the Champion was braced with another grand little setter bitch, Pennsylvania Babe, owned and handled by her amateur handler, Dr. L. W. Anderson, Punxsutawney dentist. Both dogs displayed fine form but Melody ran the course, pointed her birds, and covered the ground in such a fashion that there was no question as to the winner and champion.

As a rule, a championship dog reflects in part the character of the trainer. Certainly this holds true in Melody's case. Responsible for her development is the popular and famous Michigan trainer of bird dogs, Luther Smith. Good, sound training is important and no trainer, no matter how good, can get out of any dog that which it does not have by heredity. Full credit is given Luther Smith for all of Melody's development. She was in his kennel and string since she was 4 months of age.

Will Melody carry on the heritage

BEHIND EVERY CHAMPION are the people who help make wins possible. Here Orchard Valley Melody is backed by: kneeling, left, Luther Smith, her trainer and R. H. Habgood, her owner. Standing are Mrs. Luther Smith, left, and Mrs. Marjorie Habgood.

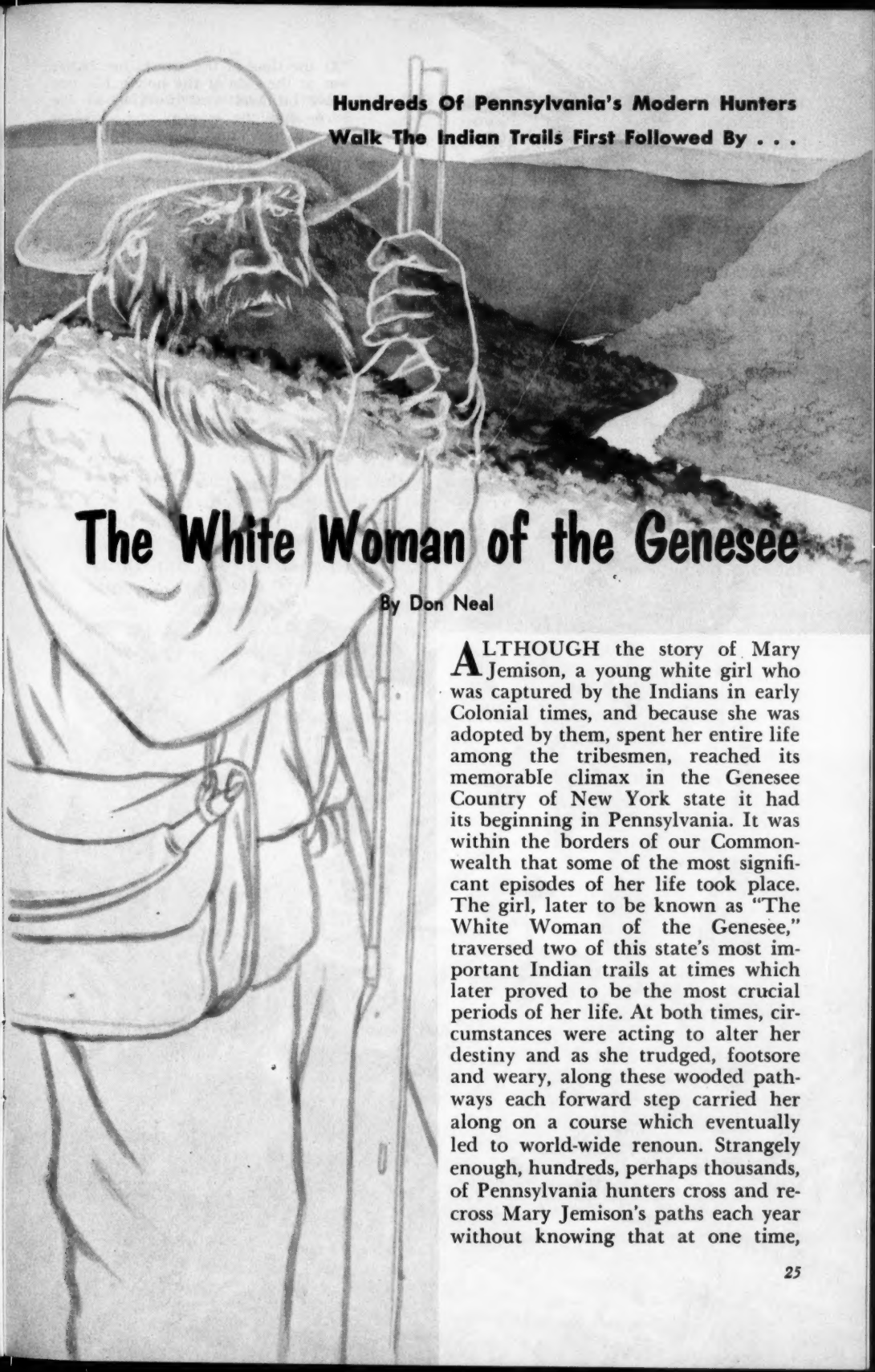
GROUSE TRIAL JUDGES were Dale Young, left, and Herman Specht. Standing between them is Dr. L. W. Anderson, Secretary of the Pennsylvania Field Trial Club. This club annually sponsors the Open Pennsylvania Grouse Dog Championship on the famous "Buzzard Swamp" grounds near Marienville.

of her illustrious sires? Only time will tell, but you can bet she is no fly-by-night and her talents come naturally from sound, scientific breeding. When the little Queen is not being readied for important field trials, she is Bob and Marjorie Habgood's favorite shooting companion. A finished performer that immediately changes her range and pace the minute she sees a shotgun, Melody is also one of the finest retrievers in the game. Despite the fact that hundreds of birds have been killed over her points from Nove Scotia to the Lakes States and in the deep South, it is the proud boast of the Habgoods that "not one dead or crippled bird have we ever lost while hunting Melody." ■

ANSWERS TO THE QUESTIONS

(From Page 13)

1. **False. They are small birds averaging about five and a half inches in length.**
2. **The water thrush is not a thrush at all, but a warbler.**
3. **The Canada Warbler.**
4. **False. Representatives of approximately three-fourths of the species recorded in Pennsylvania nest in that state.**
5. **The Tennessee warbler.**
6. **Because of its fondness for old fields and brushlands rather than woodlands.**
7. **The Blackburnian warbler.**
8. **True. It is frequently seen in central Pennsylvania in June.**



Hundreds Of Pennsylvania's Modern Hunters Walk The Indian Trails First Followed By . . .

The White Woman of the Genesee

By Don Neal

ALTHOUGH the story of Mary Jemison, a young white girl who was captured by the Indians in early Colonial times, and because she was adopted by them, spent her entire life among the tribesmen, reached its memorable climax in the Genesee Country of New York state it had its beginning in Pennsylvania. It was within the borders of our Commonwealth that some of the most significant episodes of her life took place. The girl, later to be known as "The White Woman of the Genesee," traversed two of this state's most important Indian trails at times which later proved to be the most crucial periods of her life. At both times, circumstances were acting to alter her destiny and as she trudged, footsore and weary, along these wooded pathways each forward step carried her along on a course which eventually led to world-wide renoun. Strangely enough, hundreds, perhaps thousands, of Pennsylvania hunters cross and recross Mary Jemison's paths each year without knowing that at one time,

"At the time of the attack, her father was at the side of the house, her two older brothers were working in the barn, and the women and children were in the house."
Nick Rosato

close to two hundred years ago, this famous person climbed the same mountains and descended into the same valleys that they do today as they tramp over their favorite hunting grounds.

Mary Jemison was twelve years old at the time she was taken captive. She was living with her mother and father on their farm in Adams County, located at the mouth of Sharp's Run on Conewago Creek, along with her four brothers and a sister. A woman, who's husband was serving with Washington's army, had come to live with them, too, and as she had three children, there were twelve in all living at the frontier farm at the time a band of six Indians and four Frenchmen came out of the forest and attacked the homestead.

Later in life, at the time she was telling the story of her life to Dr. James Seaver who wrote her biography, Mary Jemison remembered that at the time of the attack her father was at the side of the house shaving out an axe handle, her two older brothers were working in the barn, and that the women and children, including herself, were in the house. The Indians first secured her father, then entered the house and began plundering, taking all things they considered to be of value. As the circumstances of the Jemison's were limited, their loot consisted mostly of bread, meal and meat. And it was while the Indians and Frenchmen were engaged at plundering the home that her brothers who were in the barn made their escape and hurried towards the nearest settlement to spread an alarm.

Knowing that their attack would not long remain a secret the Indians and Frenchmen, loading themselves with all they could carry, grouped their prisoners and started off in a hurry through the woods. Staying off the main trail they drove their captives steadily westward with one of the Indians using a whip on the children to make them keep up with the frantic retreat. When the children begged for water they were given urine or nothing. At no time was there a stop to rest or eat and finally, at night fall, a camp was made without either fire of shelter and the cap-

tives were forced to lie on the ground, supperless and without a drop of water. Sleep, brought on by sheer fatigue, gave the Whites some relief during the night.

At dawn they were aroused by the Indians and the day's march started. Shortly after sunrise a halt was called and the Indians gave them a full breakfast from the supplies they had stolen from the Jemison homestead. All of them ate heartily except Mary's father, who refused the food and showed open contempt for his captors. When the meal was finished, the march was resumed and about noon that day they passed a small fort which Jemison said was Fort Canagojigge (historians think that this must have been Fort McCord, a small fort that lay north of Fort Louden). They kept going westward and by evening had come to the edge of a dismal swamp which they entered a short ways and made camp. Bread and meat were served the captives and those who were not too weary from the day's march ate portions, but all in all both appetites and spirits were at a low ebb and none of the captives relished the food.

When the meal was finished, an Indian crossed over to where Mary sit on the ground and taking off her shoes and stockings, placed moccasins on her feet. Another did the same to the young son of the soldier's wife. Then another Indian took the two of them, Mary and the boy, by the hand and led them off into the forest where they spent the night. Early the next morning the other Indians and the Frenchmen came to where they were, but none of the captives were with them. A hurried breakfast was served, then the march westward was resumed, but now one of the Indians brought up the rear and carefully replaced the disturbed grass and bent twigs that would mark the course of their trail.

That night they encamped in a small thicket where the Indians built shelters and lighted a fire to dry their wet clothes and warm their benumbed bodies. Then an evening meal was prepared and when it was finished the Indians went to their baggage and brought out a number of scalps which they stretched on small hoops they made for the purpose. It was a grisly scene, but Mary and the boy could do nothing but watch as the Indians held the hoop-mounted scalps to the fire to dry the blood and flesh before scraping them clean with their long hunting knives. In the end, the savages combed the hair of each scalp carefully and then painted the edges with a brilliant red paint. Mary recognized most of the scalps, especially that of her mother's with its long, lustrous red hair.

The murder of the captives and the day's march to the camp where the scalps were cleaned can roughly be placed in the area between what is now Cowan's Gap and Bedford. After that the party progressed westward along the famous Indian trail, undoubtedly leaving it at times to avoid detection, which was at that time a heavily used path running between the Delaware and Ohio rivers and which eventually came to be the location of the Lincoln Highway, or Route 30. On the eighth day of her captivity the Indians brought Mary Jemison within sight of Fort Duquesne (Pitt).

By this time they had been joined by another party of Indians who had as their prisoner a young white man. And as the party came in sight of the fort a halt was called. After the necessary preparations had been made, the Indians performed a ceremony which was their custom on approaching a village. (A fire having been built, the men of the party would stand around it, their weapons stacked at some distance, and smoke while they awaited a messenger to come from the village. An approach of this kind indicated that parties

or persons coming to the village had only peaceful intentions.) While they waited, the Indians combed the hair of their captives and painted their faces and hair red, in the finest Indian style. Then, at the proper time, conducted them into the fort and lodged them in a shack where they were left alone throughout the night.

The next morning the Indians gave the young man and the boy to the French. Shortly after they were taken away, two Indian women came to visit Mary, then left. Soon they came back with the Indians who had brought her to the fort and after some talk Mary was given to the women to do with as they pleased. As they were pleasant looking women, Mary was pleased with this change in her masters. And she was more pleased when the women took her from the shack to the river where they got into a small canoe and started down the Ohio.

A full day's travel down the Ohio brought them to the village where the Indian women lived. They left Mary waiting in the canoe while they went to their hogan in the village, then returned with a suit of Indian clothing and after undressing her and throwing her tattered clothes into the river, they bathed and dressed her in the most fitting Indian style. They then left her to their home and set her in the center of the hogan as a guest of honor. The next day they adopted her to replace a brother who had been killed in Washington's War."

After living with the two Indian women for some time Mary was given by them to an Indian by the name of Sheninjee. At first the thought of living with an Indian was repulsive to her, but after their marriage Sheninjee treated her in such a manner that she finally came to love him. During the second summer of living in the Indian village she gave birth to a son, but it only lived two days. Two years later she had another son to Sheninjee which she named Thomas Jemison, after her father.

That summer Mary and her husband, accompanied by her two Indian brothers, started to Fort Pitt (Duquesne) to dispose of their furs and skins, but on finding the bodies of three Whites floating in the river and being afraid to go on for fear of being blamed with the murders, they were turned about in their course. Later, they went north towards Lake Erie, evidently to dispose of their furs and skins at a trading post there, and were at an Indian village which stood where Coshocton, Ohio, is now located when they were met by a third Indian brother who lived in the Genesee Country. After some talk with this brother it was decided that the two brothers of Sheninjee's party would go with him to the Genesee and that Mary and her child, with Sheninjee's consent

"In moving east to the Genesee, the Indian party spent two days hunting near what is now Franklin, Pa. to replenish their meat supply."

would go with them. Sheninjee himself, however, decided to go back to the Ohio and then come on to the Genesee to join Mary the next Spring. As it was early Fall by now, the three brothers, with Mary and her son, soon moved off along the eastward trail and Sheninjee turned south.

In moving east to the Genesee Country it is highly likely that the Indian party used the famed Mahoning Trail for they eventually came to Fort Venango at the mouth of French Creek on the Allegheny River (Franklin, Pa.) where they spent two days hunting to replentish their meat supply. At the end of the hunt, they moved northeast along the Allegheny and gradually worked their way to the mouth of the Conewango (Warren, Penna.) where a flooded condition of the creek stopped their progress for a time.

It was here, though, that the party encountered the greatest hardships it had experienced in traveling the five to six hundred miles of wilderness that it had covered since leaving their home village on the Ohio. First the horses which they had only recently acquired wandered off and delayed them. Then, while the brothers hunted the horses, several days of steady rain raised the Conewango and by the seventh day when the brothers finally found the horses the stream was so high it seemed impossible to cross it. They immediately attempted the crossings, though, and several times were turned back. Finally, a crossing was made, but in making it Mary barely escaped with her own life and that of her nine month-old son. But for luck, and the tenacious spirit of the small, lithe girl-woman the story of Mary Jemison would have ended here.

STATUE OF MARY JEMISON is located at Letchworth Park near Warsaw, New York. It portrays her as she must have appeared at the time of her coming to the Genesee Country.

But the crossing was made and the party immediately set out along the Indian trail that led over the mountains, being a short-cut to the upper Allegheny River. Less than a day's travel brought them to the Indian village of Che-ua-shung-gau-tau where they rested for two days. From this village, close to the present Pennsylvaina state line, the eighty mile journey to the Genesee was made without undue happenings.

Mary Jemison lived the winter at Genesee and during the next summer, at a time when she was expecting him to come to her, she learned that Sheninjee had taken sick and died shortly after leaving them the preceding Fall. Two or three years later she married Hiokatoo, an Indian chief who was noted to be the cruelest of the Cruel Seneca chieftans, and as the wife of the great war leader gained great prominence among the women of the Iroquois. The land which she later acquired along the Genesee River came to her as a result of this union and it was the ownership of this land that brought her the name of "The White Woman of the Genesee." Hiokatoo was an old man at the time she married him, but she had six children to the aged warrior—Jane, Nancy, Betsey, Polly, John and Jesse—before he died at the age of one-hundred-three, and at the time she had lived with him for some fifty years.

And although the paths of Mary Jemison have been of most importance in this article the paths of Hiokatoo, too, crossed, re-crossed and and criss-crossed the state of Pennsylvania as he led his Seneca war parties up and down the Susquehanna and Allegheny rivers, or took them directly south to attack the Cherokees which he hated with utmost vehemence. At one time he crossed the state, north to south, with an army of Senecas estimated at twenty-five hundred warriors and fell upon the Cotawpes killing twelve hundred of his enemies in the first assault. The battle lasted two days and in the end the Cotawpes ceased to be a nation.

The Life of Mary Jemison, the White Woman of the Genesee, was first written by James Seaver, M. D., and was published at Canandaigua, N. Y. in 1824. It was this book, through its twenty or more editions, which brought fame to Mary Jemison. Yet it was on two of Pennsylvania's most famous Indian trails that the girl-woman of the wilderness coursed the paths which eventually led her to the Genesee Country, to the arms of the fearful Indian chief, Hiokatoo, and to a destiny which made her later fame possible. Because of this, it is possible that the spirit of Mary Jemison still frequents the mountains and valleys traversed by these trails to view again the scenes of her life's bleakest moments. ■

DON NEAL was born in Punxsutawney, grew up in Clearfield and now lives in Warren. He has been writing ever since he worked as a "jack-of-all-jobs" on a weekly newspaper; now derives about half his income from free-lancing. To a great extent, his life has been a series of hunting, fishing, camping and photographic expeditions. Local history has fascinated him since boyhood.

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Before A Final Decision Is Made, Every Pennsylvania Sportsman Should Get The Facts And Consider . . .

A Review of Deer Harvests In Pennsylvania and Predictions for the Future

By M. J. Golden
Executive Director, Pennsylvania Game Commission

There is little doubt that most deer hunters gauge the quality of the deer season on the number of deer killed. Since this is true, it is essential that sportsmen make an unbiased appraisal of the deer kill and deer range conditions. It is imperative that any appraisal include the relation of changing forest and deer range conditions to the deer herd and the impact of these conditions on deer nutrition, deer numbers and deer harvest.

Some hunters would like to believe that there is no limit to the number of deer which can be supported. Deer must eat, and the herd must be held within the bounds of its natural food supply. Experiences in Pennsylvania and other States have shown the necessity for control of deer numbers to avoid overutilization of browse. While some hunters recognize the poor browse conditions prevalent in many central and northern counties, many fail to recognize similar conditions in other areas of the State. In the few areas with better browse conditions, it would be foolhardy to allow overutilization, which would result in range depletion and fewer and poorer quality deer in the future.

Reasonably good deer hunting can be enjoyed in Pennsylvania for many years to come if we make adequate

HUNTING LICENSE SALES AND REPORTED DEER KILL-1915-1959

REPORTED DEER KILL

Year	Legal Antlered	Legal Antlerless	Deer Kill Total	Total Licenses Sold
1915 ...	1,287	Closed	1,287	262,887
1916 ...	1,722	Closed	1,722	291,084
1917 ...	1,725	Closed	1,725	316,062
1918 ...	1,754	Closed	1,754	311,768
1919 ...	2,939	Closed	2,939	402,258
1920 ...	3,300	Closed	3,300	433,965
1921 ...	4,840	Closed	4,840	464,132
1922 ...	6,115	Closed	6,115	475,861
1923 ...	6,452	8	6,460	499,544
1924 ...	7,778	126	7,904	504,130
1925 ...	7,287	1,029	8,316	525,045
1926 ...	11,646	1,295	12,941	524,042
1927 ...	14,374	Closed	14,374	506,501
1928 ...	Closed	25,097	25,097	438,917
1929 ...	22,822	Closed	22,822	509,926
1930 ...	20,115	5,979	26,094	536,401
1931 ...	24,796	70,255	95,051	581,746
1932 ...	19,724	Closed	19,724	542,703
1933 ...	20,480	Closed	20,480	529,303
1934 ...	21,137	Closed	21,137	574,690
1935 ...	23,802	46,668	70,470	614,929
1936 ...	18,084	Closed	18,084	541,697
1937 ...	39,347	Closed	39,347	606,618
1938 ...	Closed	171,662	171,662	661,730
1939 ...	49,106	14,581	63,687	662,901
1940 ...	40,995	145,580	186,575	679,168
1941 ...	19,271	Closed	19,271	686,356
1942 ...	30,860	Closed	30,860	649,215
1943 ...	23,931	14,951	38,882	582,734
1944 ...	28,411	Closed	28,411	607,900
1945 ...	24,575	1,085	25,660	713,621
1946 ...	31,110	4,209	35,319	856,020
1947 ...	31,475	63,568	95,043	850,435
1948 ...	33,608	Closed	33,608	882,925
1949 ...	46,602	84,121	130,723	839,947
1950 ...	23,302	31,515	54,817	834,172
1951 ...	34,582	37,952	72,534	857,322
1952 ...	27,164	37,829	64,993	862,821
1953 ...	37,384	16,252	53,636	890,447
1954 ...	40,915	Closed	40,915	900,113
1955 ...	45,044	41,111	86,155	931,013
1956 ...	41,921	Closed	41,921	938,064
1957 ...	49,254	55,862	105,116	970,517
1958 ...	46,738	65,187	111,925	985,070
1959 ...	38,270	51,902	90,172	*980,000

* Preliminary Figure

harvests of deer now and allow regeneration of browse species so that a continuous supply of browse becomes available. Present and future forest management practices will result in uneven aged forest stands which should provide better conditions for deer as well as most other game species. Earlies lumbering operations resulted in a rather even-aged forest and in abundant browse during the initial stages of regrowth. However, this "feast" period changed into one of famine as the trees grew up and heavy browsing pressure by deer continued. Under these conditions, some winter kill of deer occurred annually in Pennsylvania and during severe winters this kill reached serious proportions.

Most true sportsmen will agree that it is better to control deer numbers through harvest by hunters than by winter kill. There is no doubt that winter kill would have reached disastrous proportions during the winters of 1957-58 and 1959-60 had harvests of antlerless deer not been accomplished in 1957, 1958 and 1959.

Despite the records which indicate that many more hunters can "take home the venison" through harvests of both antlered and anterless deer and that reasonably good buck hunting can prevail along with antlerless harvests, some alarm has been displayed by sportsmen concerning the future of deer hunting. Obviously we cannot expect antlered harvests of the magnitude of some previous years because we will have to be satisfied with a smaller deer herd. But through diligent allocation of antlerless licenses we can maintain reasonably good deer hunting and more or less stablize the buck kill at an equitable level somewhat below the peak kills of some previous years.

If sportsmen will take the time to make a fair, impartial and unbiased analysis of range conditions and deer kill records, their undue alarm concerning the future of deer hunting in Pennsylvania will be allayed. The following harvest records will aid the sportsman in his analysis.

ANTLERED DEER KILL

	Average Annual Reported Kill		Reported Kill			Average Annual Reported Kill		Reported Kill	
	1948-52	1953-57	1958-1959			1948-52	1953-57	1958-1959	
Adams	94	247	288	226	Juniata	258	376	599	421
Allegheny	41	71	94	54	Lackawanna	224	417	311	277
Armstrong	272	333	546	313	Lancaster	33	64	102	118
Beaver	59	74	86	92	Lawrence	49	65	94	51
Bedford	560	738	1,020	716	Lebanon	114	224	256	197
Berks	172	404	576	433	Lehigh	41	92	125	78
Blair	397	606	948	574	Luzerne	684	1,026	1,263	1,019
Bradford	746	1,056	1,181	964	Lycoming	1,434	1,654	1,930	1,394
Bucks	84	197	230	188	McKean	1,759	1,642	1,123	1,053
Butler	256	347	508	355	Mercer	120	145	210	168
Cambria	326	548	621	497	Mifflin	319	490	655	414
Cameron	960	768	845	744	Monroe	628	1,078	968	886
Carbon	317	630	764	633	Montgomery	28	78	105	86
Centre	1,380	1,864	1,952	1,522	Montour	33	40	40	22
Chester	44	95	99	78	Northampton	70	130	164	103
Clarion	378	608	754	672	Northumberland	133	221	266	218
Clearfield	1,372	1,458	1,572	1,407	Perry	403	699	885	678
Clinton	1,222	1,222	1,258	1,149	Pike	963	1,347	984	851
Columbia	272	426	558	443	Potter	2,180	1,948	2,007	2,025
Crawford	337	383	426	395	Schuylkill	477	941	1,463	1,042
Cumberland	145	309	403	232	Snyder	140	263	336	205
Dauphin	259	453	523	401	Somerset	792	1,178	1,167	1,081
Delaware	6	8	10	9	Sullivan	854	1,108	990	801
Elk	1,767	1,891	1,483	1,476	Susquehanna	482	689	626	533
Erie	230	250	200	175	Tioga	1,301	1,294	1,249	1,060
Fayette	334	351	471	400	Union	216	326	394	308
Forest	1,149	1,387	1,015	994	Venango	588	761	928	893
Franklin	309	626	748	502	Warren	1,438	1,480	1,216	1,228
Fulton	265	385	453	368	Washington	28	73	135	92
Greene	52	89	189	136	Wayne	677	1,272	1,128	992
Huntingdon	736	1,198	1,773	1,151	Westmoreland	565	855	926	655
Indiana	424	558	845	624	Wyoming	333	420	411	293
Jefferson	514	733	945	863	York	74	177	252	230

Lost Mines Of Silver And Gold
Give Rise To Northeast Pennsylvania's . . .

Susquehanna Treasure

Legend or Fact?

By Gene Coleman

WITHOUT quite realizing it myself, my ears began siphoning the old timer's words out of the babble of conversation as I hunched back comfortably against the well-rubbed wood of the booth in the small hotel.

"You heard me right, Mister . . . nobody ever found that silver mine. But it's out there somewhere," the grizzled old man in the red and black checked woolen jacket was confiding to the young hunter seated across the table from him.

My newspaperman's instincts overcame politeness and I edged closer and began purposely eavesdropping. Or maybe it had been the ageless magic of those phrases, "silver mine . . . gold mine."

"Out there?" I asked myself in my mind. "Can this old guy be talking about the area I had just finished hunting since early morning?" And then I found myself chuckling a little too loudly and the old timer turned his leathery gaze on me.

It was at that moment that for the first time I came into contact with one of the strangest tales I'd ever heard about my home area of Northeastern Pennsylvania. Lost gold and silver and lead mines somewhere in the verdant valley of the North Branch of the Susquehanna River which courses through some of the finest hunting country in Penn's Woods.

I'd just finished a relaxing and fruitful day of small game gunning in northern Wyoming County and had crossed over into neighboring Susquehanna County. It had been a glorious Fall day and dusk was setting in when I braked down in front of the small back road hotel for a sandwich and a drink. Outside, in the trunk of my car, was a game bag with the wrinkles worked out over a fine cock pheasant and three rabbits.

At first I thought the old timer was just "working a drink" at the small bar with a few tall tales of local lore. But then I noticed the old boy was digging down in his well-worn woolens when it came his turn to buy.

It wasn't too long before he had an attentive audience in the few of us leg-weary hunters as he spun his tale of "lost mines" in the historic woods and hills in the Susquehanna country as the river rolls and riffles southward through Bradford, Wyoming, Lackawanna and Luzerne Counties in the Northeast Division.

A few days later when I'd gone back to earning a living as a reporter,

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GENE COLEMAN has been on the staff of *The Scranton Times* for many years and recently became this newspaper's outdoor columnist. He is an enthusiastic hunter and angler, one of the state's most able reporters of the outdoor scene.

I found myself still unable to shake the magic of the old man's yarn and I began digging through yellowed news clippings and dog-eared histories.

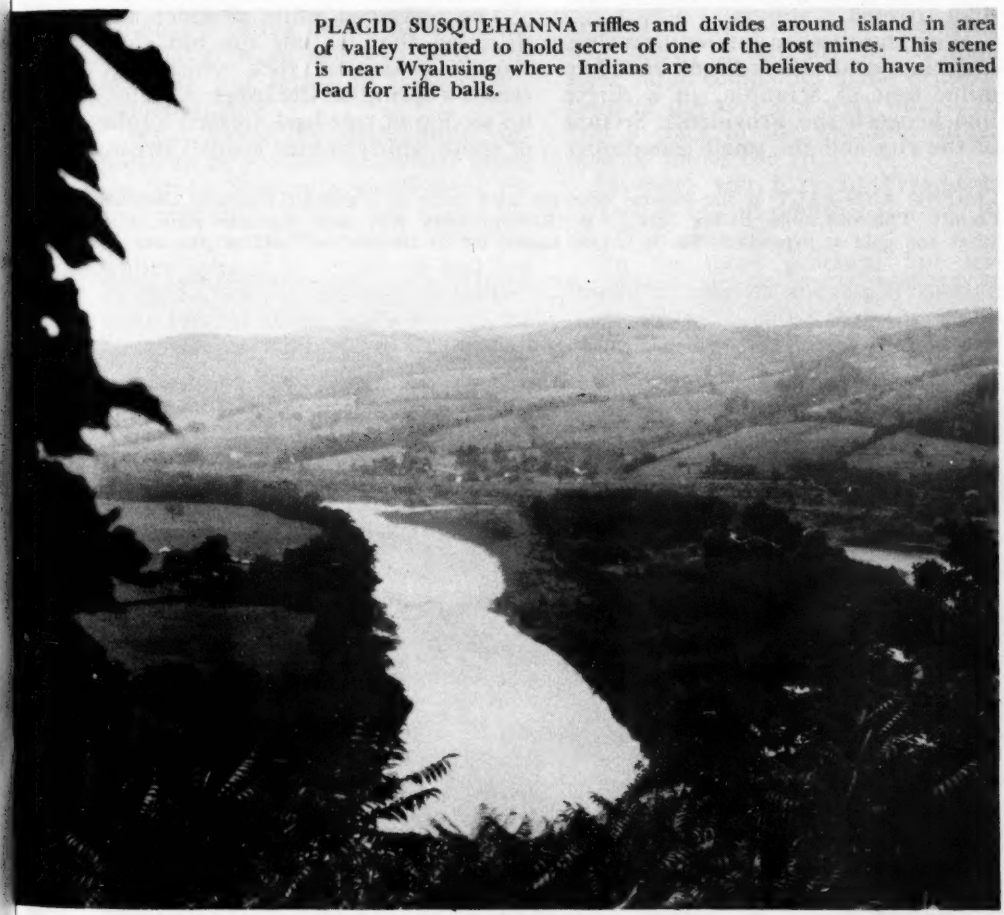
And after some cursory researching I came to one conclusion. The old timer may have had quite a few of his facts jumbled from having heard the stories told and re-told in the years since he was not so stooped and cramped. But he was right about the lost mines . . . or at least the legends of the lost mines.

But was it all legend for certain? Most likely. Yet a lot of men have died for legends, especially those involving lost treasurers. And also, every legend has some basis in fact even though the facts may have become distorted and possibly unbelievable through the years.

And I asked myself why hasn't anyone ever come across any trace of any lost mine, what with thousands of deer, bear, duck and small game hunters beating the bush and woods of public game lands and areas opened by land owners.

Well, why hasn't the long-lost lodes reputed to be in other areas like the Sierra Madres and Superstition Mountains ever been found?

But legend or not, every once in a while along the back country roads veining out from the Susquehanna's shores you'll find those who believe these treasures certainly exist.



PLACID SUSQUEHANNA riffles and divides around island in area of valley reputed to hold secret of one of the lost mines. This scene is near Wyalusing where Indians are once believed to have mined lead for rifle balls.

What about a look at the record, though! There's plenty to be found; some contradictory and some much duplicated. Here's a capsule rundown on these treasures, fact or legend.

Dr. Henry Hollister in his eminent "History of the Lackawanna Valley," the second edition of which was published in 1869, places the reader in a colorful glow of imagination based on fact.

He points out that it was rumored that a rich gold mine had been hidden by Indians shortly after the first Wyoming Massacre in 1763. The mine entrance was purported to be under a rock ledge a few miles above the Wyoming Valley at a point "where a rock the height of an Indian covered a spring."

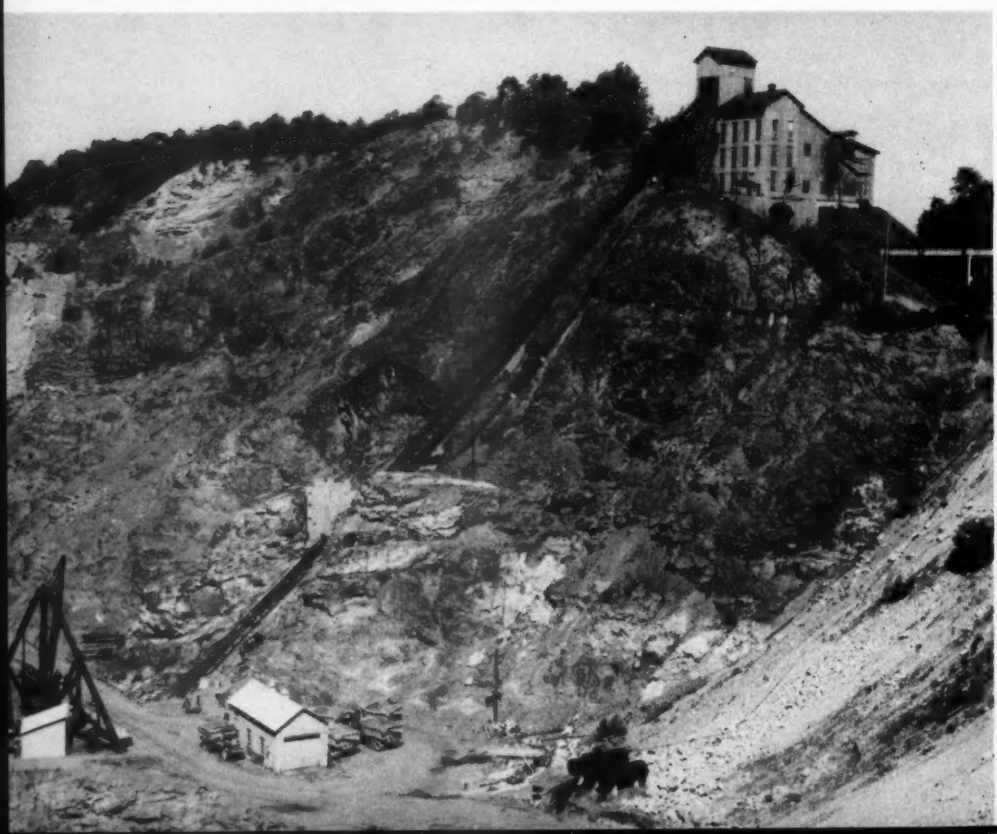
With this meager and tenuous clue, historians and others found that five miles west of Scranton, in a direct line between the Providence Section of the city and the small community of Newton is a long ledge of rock known to this day as Bald Mountain. At the base of this ledge can still be found a clear-running spring.

But despite countless searches through the years, no trace of a gold mine has ever been found. Where did this "legend" have its roots?

Dr. Hollister recorded that in 1778 a young man (not identified) was captured by an Indian party somewhere in the Wyoming Valley and carried to the top of a mountain or ledge above the Susquehanna where the party and its captive camped for the night. The young man, many years later, confided that he owed his life to a gnarled old chieftain who ordered him set free for a reason not recorded.

The unknown white prisoner also disclosed that he saw the old chief remove a slab of rock which concealed a spring on the ledge. A rolled-up section of tree bark formed a tube or spout which carried a small stream

LEGEND AND FACT is the famous open-pit iron mine at Cornwall Furnace, Lebanon County. This old mine, dating back to pre-Revolutionary War days, produces some lead, silver and gold as byproducts but is largely known for its tremendous yield of iron ore.



of water from the spring. As the white captive watched, the old chief held a cloth to the opening of the bark spout while another warrior stirred up the spring.

Within moments the old Indian removed the cloth from under the tube and there, nestled in the center of the fabric, was a tiny mound of sediment laced through with a yellow glitter.

The next morning, captive and captors moved out of the campsite and several days later arrived in the area around Kingston, N. Y., where the tiny collection of sediment was exchanged for white man's implements and the young white man was released.

According to Dr. Hollister's account, the young man returned some time later in an effort to locate the campsite but failed to uncover the hidden spring.

What about the silver mine supposed to be located somewhere along the happy hunting grounds along the Susquehanna? Well, the same historian recorded that about 1769 "the whites learned by treachery and lost by misfortune, knowledge of a silver mine located about two miles up the Lackawanna (River) from its mouth."

This mine is supposed to have been situated on the Northeast side of the Lackawanna along a high shelf about a half hour's hiking distance from the Susquehanna and about 12 miles above the Borough of Wyoming.

The basis for this report reputedly came from a man identified as John Teal, a confidante of an aged Oneida chief who disclosed the secret of the silver mine to him. But the secret died with Teal, according to history accounts.

Finally, the lead mine. What about it?

Historians of the region and many old timers maintain it was located somewhere between Meshoppen and Wyalusing in the North Branch stretch of the Susquehanna.

The story which has persisted through the years is that the Redman worked the mine almost 200 years ago and from it obtained the lead for their rifle balls after the French and English introduced them to firearms. This lost mine legend persisted so strongly, in fact, that at one time some large companies made explorations of the area but were unable to find a trace of the workings either near or under the river.

STATE GEOLOGIST checks a Pennsylvania mine. According to geologic surveys, the strata along the Susquehanna Valley in northeast Pennsylvania is not the type in which gold, silver or lead are found.

So—there you have it! Fragments of fact or legend pointing the way to the "lost mines."

On the more practical but less romantic side of the scale, mining men generally agree that the strata along the Susquehanna Valley in this region is not the type in which metals such as gold, silver or lead are found. This seems to be borne out in that about the only thing ever successfully mined in the valley has been coal which in its own way was a treasure for some, building its own kind of fortunes.

So where did the legends of the lost mines begin? Have they been wishful daydreams on the part of adventurers through many generations?

Or is it conceivable that one of these mines exists with its wealth still untapped and waiting to be claimed?

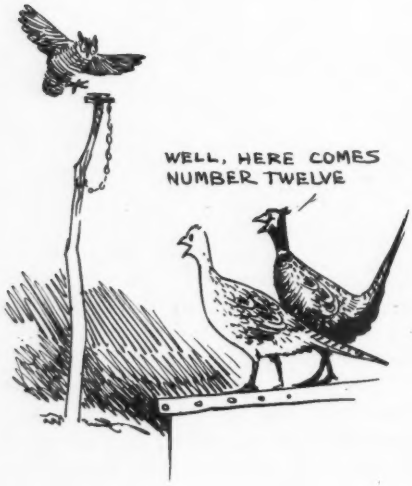
I know I can't say "for a fact" that they are legend or not.

I do know I've never been able to hunt in the Susquehanna Valley country since the day I eavesdropped on the old timer in the little hotel without wondering! ■

Owl Outlaw

BLAIR COUNTY—Recently I received a present of a live Great Horned Owl; thereby lies a story. The owl was given to me by Elder Ramsay, former game protector, who is now employed by The McMahon Dairies here in Altoona. Mr. McMahon became the owner of a flock of tame mallards three years ago. He put them out on his pond and immediately noticed that they were disappearing. He and Mr. Ramsay set a pole trap. The owl that was given to me was the twelfth one that Mr. McMahon has trapped within the city limits of Altoona and of the twelve, none has been turned in for bounty.

Mr. McMahon told me that before catching the last one, he heard some pheasants raising a fuss and when he went to investigate, the pheasants were setting on a shed roof really giving that old owl a scolding.—District Game Protector Russell Meyer, Altoona.



Popgun Pardners

FAYETTE COUNTY—On February 23, 1960, just as I sat down to enjoy supper with my family, I received a phone call from Connellsville asking me to hurry it up a little and that I could pick up some "out of season pheasant hunters" at their old tricks. I managed to get a description of the alleged culprits before he hung up the phone. I dispatched Deputy Jim Addis of Connellsville to the alleged trouble spot. When I arrived, Jim had already gathered up the alleged culprits. The "out of season hunters" were two boys one about 13 and the other about 15, accompanied by a couple of mongrel dogs and a "pop gun" each. The informer was not fibbing; they did pursue and scatter ringnecks and even shot at them, but this time they only poked their "pop guns" down into the snow and shot them with a load of "snow." No case!—District Game Protector Alex J. Ziros, Connellsville.

Party Line

ALLEGHENY COUNTY—On February 29th, I received a call from Mrs. Haley of Glenshaw. The call was made from a neighbor's phone. A squirrel had disconnected her phone by chewing the phone cord in half. After the third time the squirrel had severed the phone cord, besides rattling about in the wall partitions and upsetting various and sundry items in the basement, Mrs. Haley was upset to say the least. A box trap set in the basement baited with a well known brand of peanut butter captured the culprit, the common grey squirrel.—District Game Protector Samuel K. Weigel, Gibsonia.

Cross Keys To The Rescue

JUNIATA COUNTY—On Monday, February 15, Juniata County had a heavy snowfall and the following day on patrol I noticed the snow had laid low the ringneck pen belonging to William Stimmel of Port Royal, R.D. It was almost completely flattened. I contacted Bill and asked if this may interfere with his plans for the coming year. He replied that he could not build it himself and could not get anyone to undertake the job. He said if I ran across anyone who would do it, I was to send them around.

I called Banks Smith of Perulack, R.D. He is an active member of the Cross Keys Conservation Club that is very active in the county. He, and several trustees of the club stopped into see Bill and talk over his plight. The final outcome is interesting. The full membership of the club will descend on the project armed with picks, shovels, post hole diggers and all types of equipment. Bill Stimmel will furnish the tractor and anything else necessary to the job. The ladies of the club will keep the men supplied with coffee and sandwiches.

The net result will be 500 bird ringneck raiser still in business and the Cross Keys Club Treasury fortified with the $100.00 Bill will pay for the repairs. This cash possibly will go toward a ringneck pen of their own in the near future. This is a wonderful example of what an active club with really active members can do.—District Game Protector Robert Shaffer, Mifflintown.

Snowtime Ringtails

TIOGA COUNTY—Red Krise of Knoxville, Pennsylvania killed three raccoon with his dog on the 4th of February, bringing his total up to 93. Killing raccoon in February is unusual in this territory.—District Game Protector William D. Denton, Elkland.

Every Groundhog Has His Day

WYOMING COUNTY—The people who scoff at the groundhog as a weather prophet should have witnessed what I saw this past groundhog day about 10:00 a.m., on the Arthur Morrison Farm in Windham Township, Wyoming County. This groundhog apparently had seen its shadow and was gathering dry grass for bedding material when I saw it. It had its mouth so full of dried grass when it went back into its burrow that it looked like it had a handlebar mustache about 8 inches long. It evidently had been working on this project for some time as there was considerable evidence of it having picked dry grass in the vicinity of its burrow. Mr. and Mrs. Morrison and Clifford Adams of RD Mehoopany all saw the groundhog when it made a return trip for more bedding material.

The correctness of its prediction was evidenced on the 3rd as our thermometer read 10 degrees above zero and there has been snow, ice and more snow ever since.—District Game Protector Philip S. Sloan, Tunkhannock.

And In This Corner . . .

CENTRE COUNTY—On February 23, while on foot patrol in Penn Township, Centre County, two large woodchucks were observed having a bitter battle in approximately 15

inches of snow. Their growling and snarling could be heard at least 50 yards away.

I approached to within 20 feet of these chucks before they ceased their battle and departed into separate dens about 50 yards apart. Both chucks were bleeding as a result of this battle.—District Game Protector Lester F. Harshbarger, Millheim.

Those Bad Old Days

FRANKLIN COUNTY—There was a man from my district who took it upon himself in good faith and with good intentions to write to the Governor and tell him what a poor job the Game Commission is doing with the deer herd. He told of the many deer in our mountains of 30 years ago.

I called upon this man and tried to explain the Commission's program to him and explained that the deer kill as reported by the hunters did not support his statements that 30 years ago our mountains were full of deer. Our kill of antlered deer alone the past several years has been double what it was thirty years ago. I also explained that our deer range has been extended from a small part of the county thirty years ago until it includes most all of the wooded sections of the county and quite a bit of farmland where they should not be.

The interesting part of this whole incident was that during the course of our conservation this person stated that he had hunted for 24 years and had never seen a living buck until the past four years when he had sighted bucks each year and had killed one the past two years.—District Game Protector Edward Campbell, Fort Loudon.

Seven For One

SCHUYLKILL COUNTY—On February 29, 1960, Deputy Game Protector Seigfried and I were called out to pick up two doe deer that were injured on the highway in Manheim Township. The driver of the car told me that he had struck one of the deer and fractured both hind legs, the second deer apparently was not touched by the car, but ran across the highway into a fence and broke its neck, both deer were shot and killed. When the entrails were removed we discovered two buck embryos 9½ inches long in No. 1 deer and 1 buck and two doe embryos 9½ inches long in No. 2 deer, making a total of seven deer in one highway accident.—Acting Game Protector F. Mason Spancake, Pine Grove.

Technicolor Cottontail

COLUMBIA COUNTY—Recently I turned over to Mr. Lincoln Lang of the Game Commission's Research Division, a very peculiar rabbit that was killed by Richard Kitchen, Berwick, R. D. 1, in Salem Twp., Luzerne County, on December 26, 1959. This rabbit has bluish-gray hair about one inch long protruding thru the ordinary fur, much like guard hair on a beaver, over about 50% of his body; otherwise, the rabbit seems to be a normal cottontail.—District Game Protector Lewis H. Estep, Berwick.

Torture Chamber

INDIANA COUNTY—While visiting a mink farm, the owner and I were talking when we heard the scream of a cat. Going to the pen we found where the cat had stepped on top of one of the pens to get some feed and the minks in two different pens had grabbed the cat and had the cat stretched out between the two pens. The pens are made of ¼" wire and the one mink had the cats legs pulled into the pen approximately five inches.—District Game Protector John A. Badger, Indiana.

Pin Cushion

COLUMBIA COUNTY—On February 24, Land Manager Sprankle and myself were checking browse cuttings on State Game Lands No. 57 in Sullivan County, when we came upon a corn crib located on these lands that had approximately 30 turkeys feeding on the corn thrown outside for just such an occasion. After the turkeys fled the scene, we approached the crib to place more corn in this area as the snow measured approximately 24 inches deep. As I walked around the rear of the crib, I saw a deer lying part way under the crib, still alive, but unable to rise. A close examination showed that it's neck was broken, and quite a few porcupine quills were piercing both its eyes, causing blindness in at least one eye. There was a hole torn in the crib just large enough for the deer to force its head through for corn. It is our belief that the deer either got its head caught in this hole, slipped on the ice and snow outside, then broke its neck in the process. Then while lying there, a porcupine came along and hit the deer across the eyes when it became disturbed, perhaps by the movement of the deer's head. Another possibility was that the porcupine was inside the crib eating corn when the deer happened along, placed its head inside the hole, and then was hit by the porcupine. This could have forced the deer to draw its head back sharply and, perhaps, in the narrow confines, break its neck. Indications were that this accident happened about a day before and it certainly was a sorrowful sight to behold.—Land Manager William E. Fulmer, Bloomsburg.

Sucker For A Trap

CLARION COUNTY—A local trapper by the name of Walter Switzer related this incident to me. He had been trapping muskrats on a small spring run for two weeks. Each morning in one certain set the trap would be sprung but there were no tracks to indicate how this happened. At last one morning the villain was caught. It was, to his surprise, a six-inch sucker.—District Game Protector J. Leo Badger, Knox.

Cottontails Can Take It

MONTGOMERY COUNTY—During the month of February we were live game trapping for pheasants and rabbits at the State Penitentiary, Graterford, Pennsylvania. Our trapper there had trapped one of the woodlots that was full of groundhog holes for a period of two weeks and had taken 18 rabbits from this small patch of woods. After the two week period he was not getting any more rabbits from this particular woods so he moved his traps to another location. About a week afterwards we got some snow on the ground and I took a walk into this same woods. I was astonished at the number of bunnies I saw and at the way the briars and rest of the cover was all tracked up with tracks of the cottontail. It would seem that this area never was trapped at all and certainly looked like a game paradise. It just proved once again to me that, regardless of whether its gunning pressure or trapping pressure, if the proper food and cover is there it's just impossible to deplete Mr. Cottontail's population to the point where he can't bounce back next Spring.—District Game Protector William Shaver, Harleysville.

Deer Dozer

PIKE COUNTY—As our browse cuttings increase and the more our dozer pushes over, deer increase their use of the cuttings. On one tract that the dozer pushed over, I jumped a number of deer that had been bedded down only about 100 yards away from the dozer as it continued to add to what was down the day before. They had no fear of the machine and the crack of downed trees, but probably smacked their lips every time they heard the chug of the dozer. Another dozed area was soon occupied by cottontail rabbits only days after the area was worked over.

On another tract, a browse cutting crew was pleased to note the immediate use of a cutting by deer and also snowshoe rabbits. In still another area that has been cut from time to time, I was amazed at the number of deer using the cuts as I believe this area is one of the most heavily hunted in Pike County and hunting pressure apparently had not hurt the herd in this area. In another area, I noted that deer heavily browsed a beaver colony's feed bed that was above the frozen ice and snow.—Land Manager Albert J. Kriefski, Blooming Grove, Hawley.

Long Way From Liberia

BUCKS COUNTY—On a miserably cold and dark night late in January one of our Deputy Game Protectors received a call that an odd looking animal had been struck and killed by an auto in Middletown Township, Bucks County.

When he arrived on the scene he was met by local police who presented him with what appeared to be an albino female deer. The animal, however, had an exceptionally broad face and lacked all of the characteristics of albinism but the white coat.

The flesh of the animal was handled in the usual way—turned over to a local orphanage—and the head and hide were held for further identification. Later that week the deer was identified by an area taxidermist as a Liberian Fallow Deer fawn.—District Game Protector William J. Lockett, Doylestown, Pa.

25 Pennsylvanians Join Commission Field Force As . . .

Ross Leffler School of Conservation Graduates 10th Student Officer Class

Twenty-five student officers received diplomas and commissions as salaried field officers of the Pennsylvania Game Commission in graduation ceremonies at Brockway on April 9. These young men just completed a 10-month course in wildlife management and law enforcement at the Commission's Ross Leffler School of Conservation, located on State Game Lands near Brockway, Jefferson County. The new officers will serve a probationary period of one year before final enrollment as regular members of the Commission's field force.

Graduation exercises were held in the Brockway Area High School Auditorium with the Hon. James A. Thompson, President of the Pennsylvania Game Commission, presiding. The invocation was delivered by Rev. Norman C. McLean, Brockway Methodist Church. The School staff and graduating officers were introduced by School Superintendent Donald E. Miller, Principal addresses were delivered by Hon. John Morgan Davis, Lieutenant Governor, Commonwealth of Pennsylvania and Joseph L. Wiker, a student officer representing the graduating class. The official welcome, remarks to the graduate officers and presentation of diplomas and commissions were made by M. J. Golden, Executive Director of the Commission. John Sullivan, Deputy Attorney General, administered the oath of the office and presentation of badges was made by Roger J. Wolz, Asst. Superintendent of the School. Benediction was asked by Rev. John C. Cronin, St. Tobias R. C. Church, Brockway. The Brockway Area High School Band furnished music for the ceremonies.

This 10th student officer class began its intensive course of instruction on

June 16, 1959. About two-thirds of their time was spent in classroom study at the school, the remainder being spent in the field under guidance of selected Game Protcetors and Field Division staff officers. The course included biology, land management, law, legal procedure, police sciences, game management and propagation, public relations and public speaking. In addition to the resident staff, instructors included many staff and field officers from the Commission's headquarters and field force as well as numerous officials from other conservation agencies, Pennsylvania State Police, Pennsylvania State University and other organizations dealing in natural resource management.

Since 1936 when the Commission first established its own training school, 212 student officers have been graduated. The total includes two trainees for the North Carolina Conservation Department and one for the Washington State Fish and Game Commission.

Names, home towns and present field assignments of the 25 new graduates are:

Richard W. Anderson, Titusville—Northampton County

Lowell E. Bittner, Lehighton—Schuylkill County

Edward F. Bond, Newton Square—Bucks County

Howard W. Bower, Jr., Harrisburg—Luzerne County

Homer R. Curfman, Hesston—Potter County

Richard W. Donahoe, Lewisburg—Bradford County

Leslie V. Haines, Saint Marys—Greene County

Perry A. Hilbert, Macungie—Lebanon County

NEW OFFICER Richard W. Anderson, of Titusville, receives his diploma from the Game Commission's Executive Director, M. J. Golden as School Superintendent Donald J. Miller, left, looks on.

OATH OF OFFICE was administered to the graduating class by Deputy Attorney General John Sullivan. Members of the Commission and honored guests are seated in the foreground.

Jack M. Lavery, McClellandtown—Clarion County

Richard F. Leonard, Roulette—Armstrong County

Gilbert J. Martin, Allentown—North-central Division Office, Avis

Cordell L. Martz, Harrisburg—South-central Division Office, Huntingdon

Harry E. Merz, Pittsburgh—Beaver County

Duane J. Moore, Galeton—Forest County

Robert H. Muir, Natrona—Somerset County

Wilmer R. Peoples, Punxsutawney—Northeast Land Management Group, Hawley

Arthur D. Rockwell, Troy—Carbon County

Jacob I. Sitlinger, Gratz—Perry County

Jay D. Swigart, Kittanning—Butler County

Cecil E. Toombs, Jr., Coudersport—Schuylkill County

Theodore Vesloski, Plains—Greene County

Donald E. Watson, Milesburg—Bradford County

Joseph L. Wiker, Monessen—Centre County

Philip L. Young, Wellsboro—Westmoreland County

PRINCIPAL SPEAKER was the Hon. John Morgan Davis, Lt. Governor for the Commonwealth of Pennsylvania. Presiding officer was the Hon. James A. Thompson, of Pittsburgh, president of the Pennsylvania Game Commission.

CONSERVATION NEWS

1959 RECORD SHOWS IMPROVEMENT IN SAFE USE OF SPORTING ARMS

The record of human casualties caused in Pennsylvania by sporting arms used in hunting during 1959 shows marked improvement over that of the previous year. Reports and investigations of the unfortunate mishaps during the last calendar year have been completed and compiled by Game Commission personnel. The record shows: 17 persons were fatally struck by bullets or fine shot and 496 others were injured in some degree by gunfire or arrows. The 1959 fatalities were 10 less than those in 1958. Injuries inflicted by sporting arms by persons hunting in 1958 numbered 453.

Analyzing the Hunting Accident Reports, forwarded to the Game Commission as the law requires, reveals that in Pennsylvania last year: 6 of the 17 mortal wounds were self-inflicted; 5 occurred while deer were being hunted, 11 during small game hunting and 1 while trapping. The ratio of fatal rifle shootings to those of the shotgun was 9 to 8. (None of the deaths was caused by bow and arrow.) Fatality causes were listed as: sporting arms placed in dangerous

HUNTER SAFETY was emphasized in this showcase at the Palisades High School, Kentnersville, Bucks County. The display was created by Vocational Agriculture Students and features safety posters distributed by the Game Commission. Two deputy game protectors serve on the school faculty. A hunter safety training program was started last fall under the direction of William H. Cramp, right. Shown with him is Elmer Moore, an English teacher and Justice Meyers, Vo-Ag Instructor.

position, 1; accidental discharge of gun in hands of hunter, 6; ricochet or stray bullet or fine shot, 1; victim in line of fire, 5; hunter slipped and/or fell, 3; shot in mistake for game, 1. The fatalities occurred: 4 in fields, 4 in brush, 3 in open woodland, 3 in dense timber, and 3 on woods roads or public highways. Of the fatalities, 13 occurred in good light, 1 while rain fell, 2 at dusk and 1 in darkness.

Investigations by Game Protectors disclosed most of the hunting "accidents" were preventable. Too often they were the result of: failure to practice the common sense rules of safe gun handling; lack of firearms training; excitement, imagination or optical illusion (uncontrolled emotions); greed for game or desire to prove shooting prowess; or failing to wear bright, identifying clothing. However, the high percentage of sportsmen used good judgment and enjoyed their hunting last year without mishap. Most took precautions to prevent freak accidents and possibly "mistaken identity." Approximately 980,000 Pennsylvania hunting licenses were issued in 1959, so there was one fatal accident for every 57,647 licenses and one non-fatal accident for every 1,976.

Some persons believe the so-called "hunter accident" rate is dropping proportionate to the number of persons taking the National Rifle Association course conducted by Game Commission personnel for young and inexperienced hunters. Many sportsmen's organizations and others are cooperating to bring about greater youth participation in the firearms education and safe hunting classes and in bow and arrow clinics fostered by the Pennsylvania State Archery Association—both efforts designed to foster shooting pleasure with a minimum of danger.

IN MEMORIAM

Vernor T. Warfel

Vernor T. Warfel, recently retired superintendent of the Game Commission's Eastern Game Farm at Schwenksville, died suddenly at his home on March 31. He was 65.

The veteran Commission officer completed 33 years of faithful service to the sportsmen of the Commonwealth before his retirement January 31. He was born in Dunmore, Lackawanna County and was first appointed a Deputy Game Protector in Susquehanna County on October 20, 1920. He became a Game Refuge Keeper on State Game Lands 35, Susquehanna County on December 1, 1926 and was named Superintendent of the old Jordan Game Farm, Lawrence County in 1931. In March, 1939 he was transferred to the Eastern Game Farm as Superintendent where he supervised one of the largest propagation projects for pheasants and bobwhite quail in the East. He is survived by his wife, two sons and four grandchildren.

THREE COMMONWEALTH CONSERVATION AGENCIES ESTABLISH COORDINATING COMMITTEE

A Conservation Co-Ordinating Committee has been established by the Pennsylvania Fish Commission, the Department of Forests and Waters, and the Pennsylvania Game Commission to integrate the Commonwealth's park, forest, and fish and wildlife programs.

Secretary of Forests and Waters Maurice K. Goddard, commenting on the new committee, remarked: "We have cooperated in the past, of course, but never on a formal, high level basis. Yet this is the only way we are going to be able to tie our three related programs together effectively."

Game Commission Director M. J. Golden said that the committee decided at their first meeting to "cooperate closely on problems like law enforcement so that a more effective job can be done." Forest Rangers will be called upon to assist Game Protectors and Fish Wardens, who will, in turn, be expected to help Park Superintendents and Foresters carry out the laws for which they are each responsible.

After the meeting, Acting Fish Commission Director H. R. Stackhouse said: "I am delighted with the outcome of this first meeting. It was very productive—so much so that we plan to meet again next month and every month thereafter."

Goddard added that among other things discussed was the need for cooperation on the capital improvement programs of each agency. "We've got to do this to get the most for our dollar," he said. "Reservoirs are just too expensive to build them for just one purpose. Besides, there isn't enough land for the reservoirs we need if we build them to meet only one demand."

ORGANIZED CONSERVATION CLASS has been conducted in Altoona High School since 1951. The subject is also emphasized in all science classes. The school faculty believes formal instruction in conservation is necessary if America is to be saved from becoming a "have-not" nation. Game Commission representatives Russell Myers, left and Joseph Chick, right, here show native wildlife to, left to right, Robert Crist, Helen Cherry, and Diane Hersperger. The wildlife officers spend one day a week with the class, also sponsor field trips and other conservation education projects.

NORTHEAST DIVISION ARCHERS representing 19 member clubs of the Pa. State Archery Association met in Wilkes-Barre last March. The Game Commission was represented by Commissioners Andrew C. Long, left, and Elwood C. Huffman, right. Clayton B. Shenk, executive secretary of the Association also met with the group while Gene Coleman, Sports Columnist for the Scranton Times, second from left, spoke on archery accomplishments.

Pennsylvania Dog Law Agents Drive for Licensing, Control

It is a well known fact that when dogs roam the countryside their natural instincts come to the fore and they become predatory animals, destroying much wildlife, many nests and farmers' livestock and poultry.

Through the stepped-up program of the Dog Law Enforcement Agents of the Department of Agriculture, during 1959 both the farmer and the hunter benefited. The purpose of the Pennsylvania Dog Law is to protect humans and property through the proper control of dogs licensed and tagged as the law provides. Last year the Department first advised dog owners, in every way possible, to license their pets and hunters and keep them under control. Then the officers moved to prosecute those who failed to heed the warnings.

Department records show that last year almost 870,000 individual dog licenses were sold in Pennsylvania. That was approximately 110,000 more than the number in 1958. Kennel licenses sold in 1960 increased almost 500 over the previous year, for a total of 5,717. But during 1959, despite wide publicity, 2,904 persons in this state were found guilty of failing to obtain licenses for dogs over 6 months of age as the law long has stipulated. Also, many substantiated charges were filed against owners whose dogs ran at large and killed livestock, poultry or wildlife or ruined gardens or shrubbery.

The Dog Law Agents are now engaged in a campaign to further increase the licensing and control of the estimated 1,250,000 dogs in the state this year. They advise that the 1959 dog license expired January 15, 1960 regardless of the date purchased.

Pennsylvania Dog Law enforcement officers reported that last year they found many an instance in which a sportsman failed to purchase a license for his dog until he obtained a hunting license, often months after the dog license should have been bought.

GAME LAND TOURS are available to any organized group. Commission land managers welcome the chance to show sportsmen and other interested persons the work being done to improve wildlife habitat on these areas. Shown here on a tour last summer is the Conservation Class of Altoona High School.

East to Host 1961 International Conference

The 26th North American Wildlife and Natural Resources Conference will be held next year in the Statler-Hilton Hotel, Washington, D. C., on March 6, 7, and 8, according to the Wildlife Management Institute, sponsor of the large international conservation meetings. Announcement of the 1961 meeting site was made at the close of the successful 25th conference in Dallas, Texas, early last month.

Approximately 1,000 persons attended the Dallas meeting. Conferees came from nearly all the States, including Alaska and Hawaii, and from Canada, Mexico and England. Nearly 600 persons attended the annual conference banquet.

Water Pollution Control Bill Killed

A presidential veto and an abortive House attempt to set it aside have flooded out hopes for immediate expansion of the successful Water Pollution Control Act of 1956, according to the Wildlife Management Institute.

The hub of the legislative scrambling was H.R. 3610, by Congressman John A. Blatnik of Minnesota, which sought to increase Federal grants for the construction of State-approved municipal sewage treatment plants to $90 million annually. Grants to individual projects would be limited to $450,000 or 30 percent of the estimated cost, whichever is less. The present law authorizes $50 million annually with a project ceiling of $250,000 or 30 percent.

Dollars for Ducks Campaign Opens

A national campaign to raise necessary funds for the lease and purchase of wetlands for migratory waterfowl was announced in Washington late in February, the Wildlife Management Institute reports. The purpose of the special drive is to offset the loss of income from the regular sale of the 1959-60 Duck Stamp—down about 25 percent this year—so that the recently expanded waterfowl refuge program can get underway as anticipated.

Each purchaser of a Duck Stamp during the campaign will also receive a certificate signed by Secretary of the Interior Fred A. Seaton showing that "the holder of this document did purchase the attached Migratory Waterfowl Hunting Stamp as a contribution to the essential management and protection of these birds which constitute so vital a part of the American wildlife heritage."

The Duck Stamp Act was amended recently when sportsmen asked that the fee be raised to $3 and all the proceeds, other than those necessary to reimburse the Post Office, be spent for the purchase and lease of vital waterfowl refuges and nesting areas. The drop in income is believed to have resulted from the fact that fewer persons purchased stamps because of the generally poor flights of ducks and the restricted shooting seasons and bag limits last season

The certificates measure 5 by 7 inches and are suitable for framing and display on the wall of a clubroom, den or office. Personal checks or money orders are acceptable and they should be mailed along with a request for the $3 stamp and the certificate to the Bureau of Sport Fisheries and Wildlife, Department of the Interior, Washington 25, D. C. Make checks payable to the Bureau.

SPORTSMEN OF THE YEAR selected by the Delaware County Rod & Gun Club was Bob Yake, right, who has headed the Federation's essay contest for school children and recently retired as a high school teacher in Lansdowne. Congratulating him are, left, Shorty Manning, well known sportsmen and outdoor writer who won the award last year and club president Witmer.

Atlantic Waterfowl Population Holds Steady, Survey Shows

The number of waterfowl on the wintering grounds of the Atlantic Flyway was about the same as last year, according to the Fish and Wildlife Service, Department of the Interior.

This information was obtained from the annual survey conducted by the Bureau of Sport Fisheries and Wildlife on wintering waterfowl populations in the Atlantic coastal States, plus West Virginia, Pennsylvania and Vermont. Weather conditions throughout the Flyway were ideal this year for counting ducks and geese.

The survey disclosed that the black duck, which has exhibited steadily decreasing winter populations in recent years increased 21 percent over last year. A substantially higher portion of blacks was found in the northern half of the Flyway than last year.

The effect of the severe drought in the prairie nesting areas was evident. Mallards which occur in important numbers during the winter from Maryland south showed a moderate decrease compared with last year. There was no change in pintails.

Of the diving ducks, redheads showed a drastic decrease of over 50 percent, whereas the canvasback and ringneck appear to be holding their own compared to last year's low population. The figure for the ruddy duck was double that of last year.

Snow geese showed an increase of about 50 percent. Likewise whistling swans, another far-northern nester, showed nearly a 50 percent increase. Canada geese increased 25 percent, whereas brant changed but little from last year.

This annual survey of wintering waterfowl populations in the United States was conducted by the Bureau of Sport Fisheries and Wildlife in cooperation with State Fish and Game Departments, the Armed Services and various private organizations and individuals.

In the Atlantic Flyway, observations commenced on January 4 and the bulk of the survey was completed by the evening of the 5th. Over 200 workers participated in this operation, using 33 aircraft, 102 cars, and 30 boats, clocking 20,500 miles in the air, 10,500 miles by road and 2,000 by boat. Wintering areas in Canada were surveyed by Canadian Federal and Provincial game personnel.

Duck Rearing and Banding Expanding Under Pennsylvania Waterfowl Program

Contributing toward better duck and goose population in Pennsylvania the Game Commission, as part of its wildlife management plan, established numerous shallow lakes and reared, banded and released 65,033 ducks in the state, beginning in 1951. Many sportsmen cooperated in the effort to develop better waterfowl hunting. They returned information on 8,514 duck bands in the last 9 years, a 13.1 per cent recovery. The number on the leg band and the date and place the bird was bagged provide important information to state and federal agencies who are studying the behavior of ducks and geese as guides toward improving waterfowl programs.

Charting the localities in which Pennsylvania-released ducks were taken and reported, it was interesting to note that 88.7 per cent of all recoveries were bagged by persons hunting in Pennsylvania. However, the flights of some of the other birds showed an impelling urge to travel. Ducks were reported from the Canadian provinces of Saskatchewan, Manitoba, Ontario and Quebec. In the United States the migrants had traveled from Pennsylvania to the States of Washington, North and South Dakota, Arkansas, Georgia and Florida.

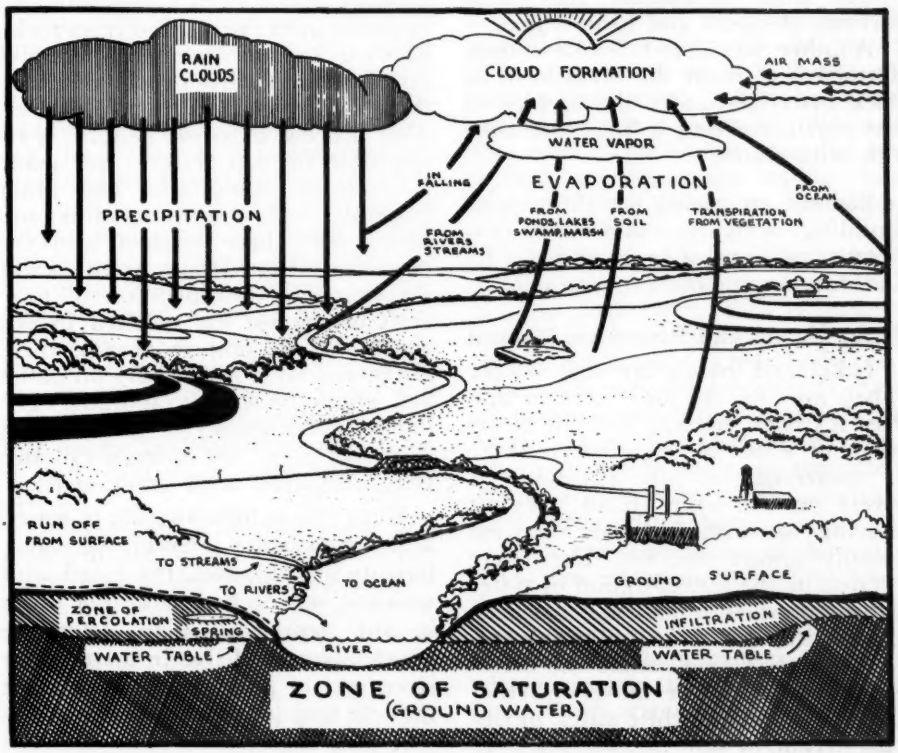
Exploring Waterways

By Ted S. Pettit

WHEN most outdoorsmen think of streams and lakes at this time of year, they thnk first of fishing. For the next month or two, fresh water fishing in Pennsylvania is at its best. But right now and for the next two months, many of our most interesting birds and mammals may also be observed in or near ponds and streams as they produce and rear another generation of young.

Mammals, from the tiny water shrew to the beaver, with muskrats and mink in between and birds from the water thrush to waterfowl all spend some or all of their lives in or near ponds and streams.

The purpose of this article is to



suggest a few do-it-yourself activities that show how nature works in an aquatic environment and the various interrelationships that exist between plants and animals and that environment.

How Lakes And Ponds Are Formed

There are several ways in which lakes or ponds have been formed. One way results from a shift in the earth's crust, so that a depression is formed that fills with water.

Glaciers have been responsible for many lakes. As the glaciers move they gouge out holes in the earth that fill with water, or when they stop moving they may deposit the soil and rocks they carry and dam up a valley to form a lake.

Lakes may also be formed by geologic processes that result in land being lifted in such a way that it dams a river or blocks off an arm of the sea. Silt washing downstream or landslides from mountains may dam streams or rivers and form a lake.

Another way that lakes have been formed is through the breakdown of rock materials under the surface of the earth, creating a hole that then fills with water.

Beavers are noted for their pond building activities, and man has created millions of acres of water by building large dams or farm ponds.

How Streams and Rivers Are Formed

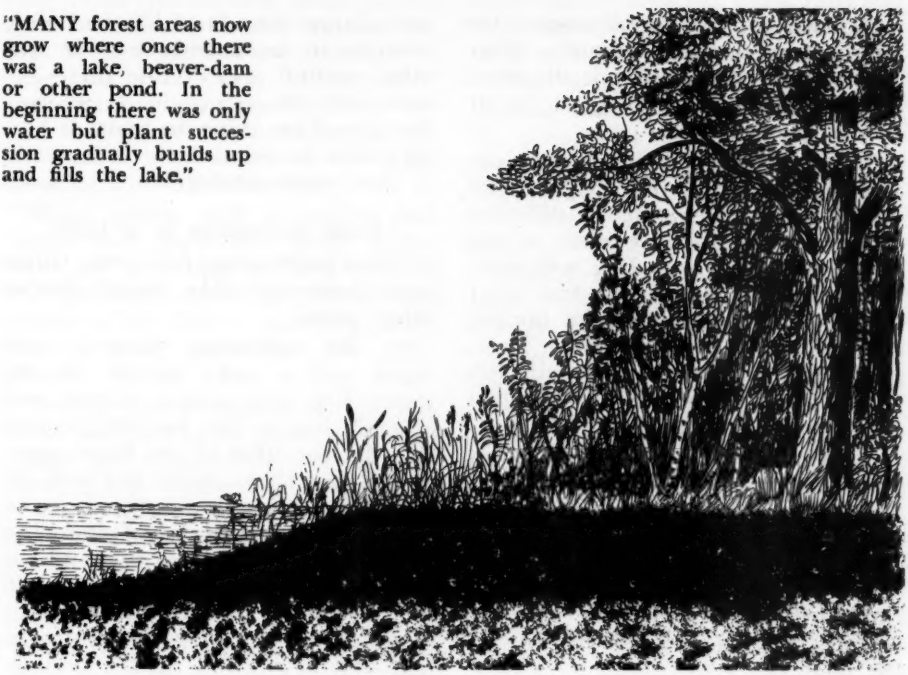
Lakes and ponds are still waters. They may be fed by a stream and feed a stream or river. But the movement of water is very slow, if there is movement at all. Streams and rivers on the other hand are fast moving or slow, but ever moving, usually toward the sea. They were created by the concentration of water cutting down into land that has been pushed upward from the earth's surface by forces from inside the earth. How fast the water moves—whether it is a bounding white-water mountain stream, or slow meandering river depends upon the slope down which it runs. The amount of water in streams and rivers and the speed with which they flow may change with the seasons. Spring rains and melting snows frequently fill streams and rivers to overflowing. In late summer the water level may be much lower.

A fast-moving stream, carrying rock particles and rocks themselves, and water action itself, wears down the stream bed and the surrounding hills. Thus a young valley may be shaped like a V. As water runs through it for years and years it gradually becomes the shape of a U. This does two things: First, it carries silt and rock particles into the river, which makes the river shallower and slower moving. At the same time, this action levels out the stream and cuts down the slope down which it runs, and thus slows down the speed of flow of the stream water.

Water running off mountain or hillsides into streams carries salts and minerals from the soil and from rocks. Flowing streams themselves dissolve certain minerals from rocks and carry them into rivers and then to the sea. This process, scientists believe, is responsible for salt water. Over many millions of years, salts and other minerals from the mountains and plains have been washed into the seas, a little at a time. As the water evaporates, a concentration of minerals in the sea has resulted in salt water. In addition to oceans, there are inland lakes which have no outlet and where the water evaporated causing a concentration of minerals. In these salt lakes few animals can survive, compared with fresh water.

Many things influence life in water. The temperature, amount of water, fertility of the water, the speed with which it moves, how clear the water is, the depth, all help determine which plants will live in a stream or river, lake or pond. In turn the plant life will help influence the animal life that lives there.

"MANY forest areas now grow where once there was a lake, beaver-dam or other pond. In the beginning there was only water but plant succession gradually builds up and fills the lake."



But conditions may vary widely in one small water area, so that while we consider water as a total natural community, there may be several smaller communities within the large one. In a mountain stream, for example, there frequently are stretches of shallow rapids, followed by a deeper pool where the water is slow moving. In a river there may be broad shallow areas where silt has been deposited, followed by a narrow section of deep, fast moving water. In a lake or pond, the water along the edge may be shallow, warm and suitable for plant growth. Only a few feet away, the bottom may drop off to deep cold water, with few if any plants.

Different kinds of plants and animals will live in each of these smaller communities, depending upon their individual needs and requirements. Some aquatic animals need a combination of these smaller communities.

Trout, for example, live in fast-moving, cold, clear streams. They thrive where there is a combination of rapids and deep pools and where there are gravel or sand banks in slow-moving water. They lay their eggs in the gravel. They find the food they need in the rapids or at the beginning or end of the rapids; they rest and find shelter in the deep, cool, clear pools.

Temperature changes in water have a tremendous effect on the animal life that lives there. This is because some of the animals that live in water are "cold blooded." Their body temperature is very close to that of their environment. Birds and mammals are "warm blooded." Their body temperatures remain the same regardless of the temperature of the environment surrounding them.

When the temperature of the water is too low, many animals slow down their life processes and hibernate. They remain relatively inactive until the temperature increases to the point where it meets the needs of the animal. Warm water also has an effect on aquatic life.

Aquatic animals need oxygen for life just as do land animals. They get it from the air that is dissolved in the water, as we get it from the air in our atmosphere.

In fresh water, animals find the temperature range they require and the oxygen by moving to different levels of the lake. Under certain conditions water in a lake will form three general layers, the top layer being the warmest and the bottom the coldest. The in-between layer, called the "thermocline," usually has the necessary temperature and oxygen combination for fish.

This layering occurs in summer in lakes of certain depths. In lakes where this does not happen because the water is not deep enough, and therefore is the same temperature all the way down, only those animals that can withstand the highest summer temperatures will survive and live in the lake.

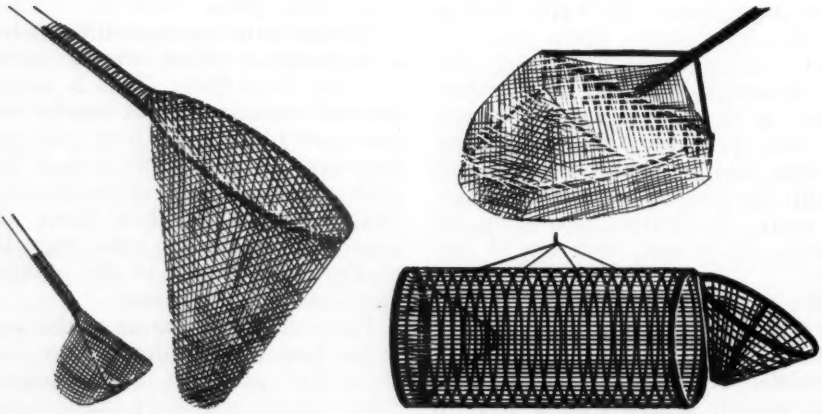
Waterways as natural communities of plants and animals are tremendously interesting to explore. There are a larger variety of life and more animals to be found than in any other natural area. While these animals are interesting in themselves, the important thing to know is how they live in relation to others and to their environment.

Plant Succession in a Lake

Many forest areas now grow where once there was a lake, beaver-dam or other pond.

In the beginning there is only water and a rocky bottom. In the water live microscopic plants and animals that are free floating. Around the edge are other plants. Over many, many years these plants live and die and their remains build up a layer on the bottom in which other plants can grow. These plants too, live and die and add to that layer of newly formed soil. In the meantime, soil from the surrounding area may wash into the lake and help build up the bottom.

Finally, around the edges in shallower areas, this soil replaces the water and builds up to the surface.



Now other plants may grow—plants such as sedges, bulrushes or cattails, that as they grow, form a mat over what was once water. As they grow and die they too help build up the soil, so that other plants may grow, plants that could not grow before because of too much moisture.

Next, plants such as grasses and sedges will grow and these plants form sod and more solid soil. They will gradually move out toward the middle of the lake or pond as conditions become suitable for their growth.

Swamp shrubs such as willow may move in next and grow with the grasses and sedges and finally replace them. Trees such as red maple, ash or elm will grow and shade out the grasses. These trees also will move out over what was once the lake as conditions are created suited to their needs.

Finally, the climax forest will replace these swamp shrubs and trees, sometimes with an in between stage, sometimes not.

As this succession takes place, it has a dramatic effect on animal life in the lake. In the beginning, this lake may have supported fish that can live only in cold water. Ospreys or eagles may have found food there. On the bottom lived clams and mussels. In the shallower, warmer water different kinds of fish may have lived.

As the bottom filled in and water became shallower, it also became warmer. More animals could live in the submerged plants. These insects supply food for sunfish or crappies. Bass would be found there since the other fish and the insects supply them with food.

Ducks such as mallards might nest along the edge since they too would find a supply of food in the plants that grow close to the surface.

As the cattails, bulrushes and reeds grow out from shore, the water has been replaced. Now birds that nest in such an environment move in—red-winged blackbirds, coots, rails and ducks. Muskrats will find food and cover and mink will be at home here.

The area of open water gets smaller, shallower and warmer. Fish life changes to those that can live in the new environment. Around the edges now is a sedge-meadow where mice can live along with bobolinks, marsh hawks and short-eared owls.

Finally, as the forest takes over, the animal life is the same as in any forest climax. The animals found are those that live or feed on dry land. The ducks, muskrats, fish, turtles and other aquatic life are gone.

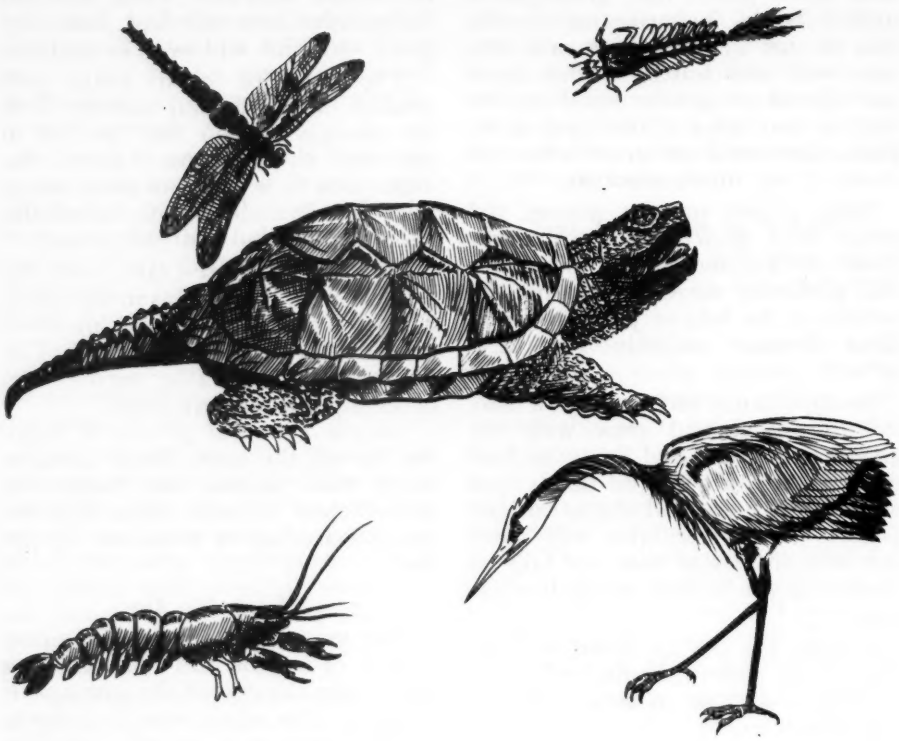
This is a natural process. It is going on all the time, faster in some lakes than others, but happening nevertheless. In some places it is being speeded up by man's use of the land.

Things To Do

The first thing to do in exploring a pond or stream, and a project that could take the rest of the summer, is to make a list of as many as possible of the plants and animals that live in the water. Collecting specimens of some of the plants will be easy and wild flower guides may be used to identify such plants as pond lilies, smartweed, spatterdock, water shield, lotus, water buttercup, and water chestnut. Some of the underwater plants such as elodea, water milfoil, pond weed, arrowhead, bladderwort or water fennel may be more difficult to identify at first, and you may need help to list the algae you find. Perhaps a local fishery biologist could help or someone who makes aquaria as a hobby.

There are many small animals that live in water that you can collect, from some so small you need a microscope to see them, up to crayfish, insects, salamanders, snakes and turtles. Drawings on these pages show how to make some of the equipment you need to collect these animals.

Many animals too, must be identified by sight or sound, or by observ-



ing tracks, droppings or nests or homes.

But it is reasonably easy to list such animals as mink, muskrats, beavers or raccoons as living in or near the pond by finding their tracks, homes or signs of feeding. Birds such as herons, kingfishers, ducks, ospreys or shorebirds that feed in the water and nest along the edges may be identified by sight or by recognizing their calls or songs.

Local fishermen or fishery biologists can tell you what fish live in the water—or you may find out for yourself what some of them are in the obvious way.

Once you have made as complete a list as possible of the plant and animal life in the particular body of water you have selected to explore, the next step is to try to discover for yourself what relationships exist between these plants and animals and their environment.

Suppose you see a heron, for example, catch a golden shiner on the edge of the pond, you know that the heron eats shiners, but what do shiners eat? In other words, try to work out a few food chains, involving the animals in the pond or stream, starting with plant life and ending with a bird or mammal high up the ladder.

Perhaps you could use specimens you have collected, plus pictures or drawings, to make a three dimensional diorama based on the food chain drawing on this page.

These projects will help you get started in explaining a pond or stream. They are first steps necessary to carry out projects to be described next month, that go more deeply into why plants and animals live where they do—and how they live together in water communities. ■

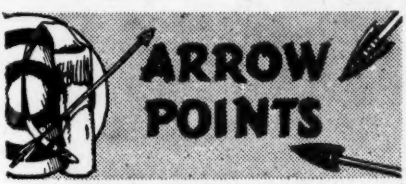
The Only Way To Becoming A Successful Archer Is To First Learn . . .

How To Shoot A Bow

By Tom Forbes

THE bow is not a complicated weapon. Skill in its use is acquired by learning and practicing fundamental techniques which will enable the archer to register hits on the target with consistent regularity. Habits are acquired through practice and you will profit by starting right so that your scores will consistently improve. Poor shooting technique will be difficult to break and retard your progress and enjoyment of the sport of archery. Among your many friends there are probably several bowman and you would be well advised to shoot your first arrow under the personal instruction of one of them. Archers are a friendly group, willing and anxious to teach you the fundamentals. You do them a favor and make it easier for both of you if you have no faults to correct. It is almost a certainty that there is an archery club in your vicinity. Contact the secretary and apply for membership. The members will teach you how to shoot a bow and you will enjoy their fellowship.

To become proficient in any art requires effort on our part. We study written material, listen to instruction, and watch demonstrations, and then attempt to apply and use what we have learned. For discussion purposes we can break down the act of shooting a bow into several components. Each one plays an important part in the act of shooting. To the uninitiated, the whole seems a smooth effortless act. But the habit to perform each phase is only perfected by practice. It's the man behind the bow that scores the hits. Just shooting is not enough. A conscious effort must be made to apply the basic principles each time an arrow is drawn and released from the bow.



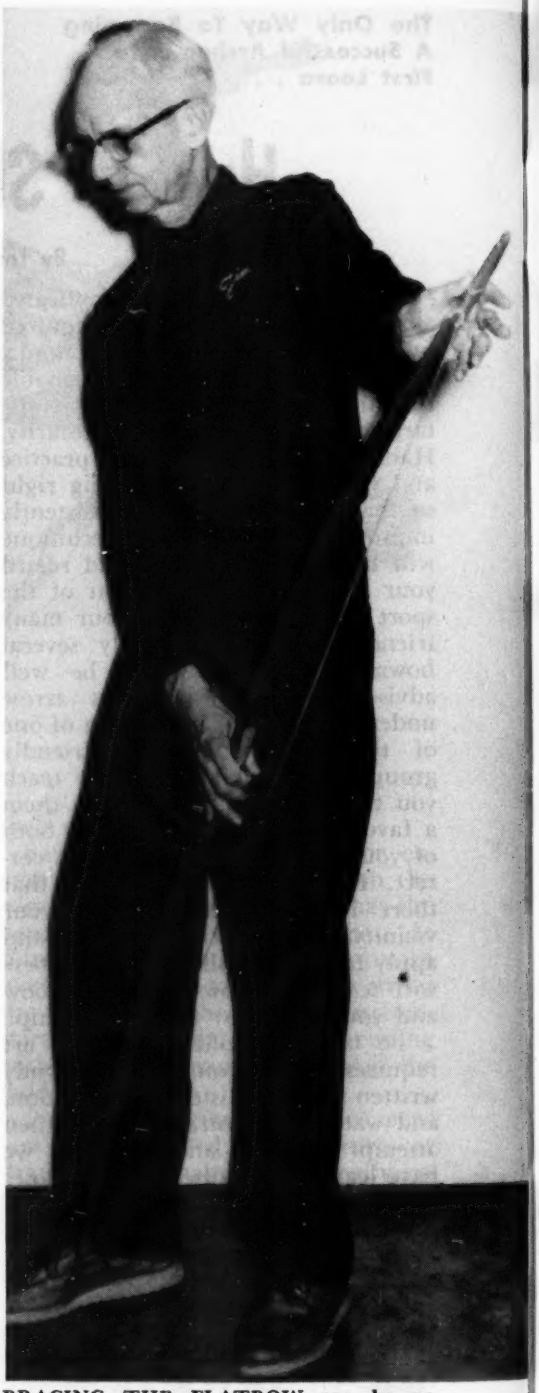
Let us assume that club facilities or personal instruction are not available to you and that you have set up a range on your own property. The butt on which you will pin a target may be made of three bales of rye straw wired together. These bales should be those made by a stationary baler. Each of the bales will weigh approximately 90 pounds. Secure two wornout auto tire casings and lay them side by side on the ground. This is the platform on which the bales are placed. The tires serve two purposes. They prevent moisture from rotting the straw and arrows will rebound from the casings and not slide under the bales. The bales should stand on their sides and be bound tightly together with wire. Lay a sheet of roofing paper on top of the top bale to protect the butt from the weather and bind the bales together lengthwise so that the wire is on the sides of the butt and does not pass across its face. The location of the butt is important. For safety it should be set in an open area where the background is unobstructed by trees or shrubs. When you are on the shooting line you must know that there is no possibility of any living thing getting into the

line of fire, either in front of or to the rear of the butt. Arrows which miss the butt may travel a long way and the field of fire must be clear. Rye straw already baled is difficult to obtain in many localities. Field balers are in quite common use and these bales weigh approximately forty pounds, are loosely packed and tied with twine. There is a target baler on the market which makes it possible to bind these bales to the desired density so that they will provide a satisfactory butt. These balers are provided with a ratchet mechanism and the density can be controlled by tightening or loosening the ratchet with an ordinary wrench. Regardless of which type of butt you use drive two 2″ x 4″ stakes at the back of the butt and wire the completed butt to them.

The bane of the beginner is retrieving lost arrows. You can expect to miss the butt so grass in the immediate foreground and back of the butt should be cropped closely to facilitate recovery of your arrows. An arrow that misses the butt will slide along under the turf until it is completely concealed and the beginner should mark well the spot where the arrow landed and immediately retrieve the arrow. Otherwise you will spend the major portion of your first practice sessions walking around with a bent head searching for lost arrows.

When you find your arrow with the feathers imbedded in the turf, uncover the tip of the arrow and draw it forward in the line of flight without bending the shaft. This will protect the fletching and prevent it from damage.

Select a shooting line not more than twenty paces from your target and provide a ground quiver or bow holder at this location so that you do not lay your bow on the ground when you go to the target to pull your arrows. Take care of your bow. Keep it off the ground. Moisture is destructive and you could step on it and do irreparable damage. Slip your



BRACING THE FLATBOW can be accomplished without mechanical aid, as shown here.

arm guard in place. If you forget to do so you will get a sharp reminder on the inside of the forearm from the bow string the first time you release an arrow.

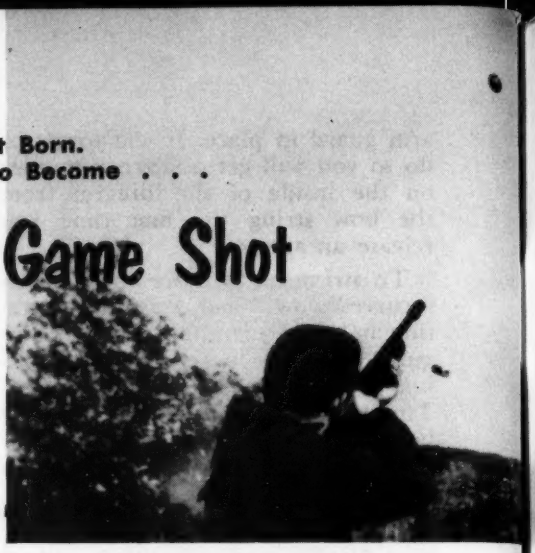
To string or to brace the modern recurved bow is not a simple operation and some manufacturers will not guarantee their bows unless a bracing jig is used to accomplish this act. The flat and semi-recurved bows may be braced by the individual without using a mechanical aid. Two methods to string or brace a bow are commonly practiced. Today, all but the cheapest bows are supplied with a double loop string, one loop slightly larger than the other. To string a flat bow place the larger loop over the upper limb of the bow. The upper limb may be identified by the arrow plate which is set in the upper limb at the place the arrow rests against the bow when it is on position on the arrow rest. Let the loop slide down the limb. Place the lower loop in position in the nock of the lower bow limb and secure it there by wrapping a rubber band around the tip of the bow. Now hold the bow in the right hand and place the tip of the lower limb against the instep of the right foot. Your bow hand should be in contact with the back of the grip and you should be looking at the back of the bow. Lean the bow across your front and place the heel of your left hand on the back of the upper bow limb just below the loop of the bow string. Grasp the bottom of the loop with the thumb and first finger of your left hand. Now exert pressure on the bow by shoving outward with the heel of your left hand on the upper limb. At the same time pull with your right hand. The bow will bend and you can slide your left hand forward or toward the upper bow nock until you can place the upper loop of the bow string in position on the bow nock. Gradually release the pressure. Caution—keep your fingers on top of the bow string! Do not let them get between the string and the bow limb. During the act of bracing your body weight will be mostly on your right foot. To avoid injury in case your left hand slips or the loop is not properly seated in the nock when the pressure is released, always keep your face turned away from the bow tip. To play safe at this point revolve the bow until the string is toward you, then examine both loops to see that they are seated firmly in the bow nocks. If a loop is improperly seated and slips from the bow nock the limbs will fly away from you and you will be safe from a possible injury. One more precaution, during the act of bracing do not let the tip of the lower limb touch the ground. The pressure has to be applied against your instep to avoid snapping the tip.

When a bow is properly braced the distance between the bow string and the grip is such that the bow will deliver the maximum velocity or cast to an arrow without overstressing the bow fibres. If the bow is underbraced it loses cast and if overbraced it can be broken at full draw or materially weakened so that its performance will be below par. This distance is known as the "fistmele" and the better bows are accompanied by instructions which fix this distance. If a bow string is too short for a particular bow the string must be discarded. If on the other hand upon stringing your bow you find that it is underbraced, meaning that the string is too long, you can take down (unstring) the bow using the same procedure in reverse by which you braced it; slip the lower bow loop off the limb of the bow and revolve it several times to put a twist in the bow string. This will shorten the bow string. Now brace the bow and check for the correct fistmele. Repeat if necessary.

Once the bow is properly strung, flex it a few times by making partial draws. The bow, like the human, needs loosening up exercises. Now we are ready to start our first practice session. ■

Most Good Shooters Are Made, Not Born.
Sportsmanship Requires All Of Us To Become . . .

A Practical Game Shot



By Jim Varner

MAY can well be considered a month full of promise for the outdoorsman no matter what his interest—fishing, hiking, photography, shooting or just plain rambling over the countryside. Everywhere the land is astir with life's renewal, a change from the tranquility of winter. Let's enjoy this month of the year to the fullest extent, and help others less fortunate enjoy it as we do. Make many days afield a "must" with your family and friends. And by all means, take time to review your abilities in everything you do outdoors. By seriously searching our souls and remembering the mistakes we have made in the past, I think most of us will agree that most of our outdoor skills (and especially our shooting) can be improved.

What do we mean by a "practical game shot?" Is he a natural born shooter (if there is such a character) who needs little or no training? Or is he the individual who came up through the ranks by applying what he learned through careful training and a lot of first-hand experience?

I will admit that some hunters are more or less "naturals" when it comes to consistently bagging game. But they are few and far between. Most of our practical, unerring wing shots with the shotgun and marksmen on running deer or other moving game have achieved their skill by being intelligently methodical. The fact that their companions and competitors are skillful creates a challenge to their ego and they immediately meet this challenge by trying to discover what makes the other fellow "click" while they continue unsuccessful. Less than 10 percent of our hunters could qualify as practical game shots. Some may rate fair with the scattergun on rabbits, poor on birds like quail, grouse and ringnecks and downright poor on ducks, especially pass shooting which calls for estimating distance and long leads. This same nimrod who uses a rifle for hunting deer seldom takes time to become acquainted with it. He is usually a rapid fire artist that never hits his target. Another gunner may be quite proficient with the rifle on game ranging from squirrels to deer but be hopeless with the shotgun. With the latter he is either too deliberate and slow in aiming, or he depends too much on a wide pattern with little thought as to its effective range. Only a few sportsmen afield ever develop into all-around good game shots.

We should not criticize, however, the thousands who like to go afield each year in search of game simply because they lack reasonable skill and experience. Many logical alibis can be offered in their favor—too busy making a living and little time for recreation, financially unable to afford skeet and trap shooting or rifle

and revolver ammunition, lack of range facilities either public or private, unfamiliarity with different firearms, and finally, disinterest of experienced shooters in helping the beginner or inexperienced. Then, too, most of our practice must be on simulated inanimate targets. You can "shoot for real" during only a relatively short period of the year, at least on game species.

But you don't necessarily need a smoking man's taste to think! Burning up a thousand or so shells at the traps and firing hundreds of rounds of high-powered ammunition on the rifle range will help, but little skill afield will result unless you apply what you learn by taking time to think when a grouse flushes out of the thicket, a big cock pheasant cackles wildly as he gives you the horse-laugh, or a big stag keeps on waving a white flag as he leaves you stuttering and bug-eyed, your rifle still smoking from five empty brass hulls scattered nearby. Wouldn't we all be better off with a single shot firearm sometimes? Necessity somehow helps one to gain in efficiency.

The greatest shotgun shooter I ever knew was a man who taught me wing shooting when I was a boy in southern Iowa. He was a market hunter who lived near Grand Island, Nebraska on the Platte River. His name was Wes Power and the firearms he owned would be discarded as junk by most of you who are reading this column. His "arsenal" consisted of one American Arms Company Damascus barrelled ten gauge, another of the same make in 12 gauge, and a big gauge muzzle-loading, single barrel. Because he had a large family and made little money, he used only the cheapest black powder shells and reloaded the cases until they practically came apart and burned off around the brass head. Out of dire necessity, this fellow had to get game and lots of it with nearly every shot. And he did just that. There were few wasted shots and I soon found his skill presented a challenge which I tried to duplicate, for I was just as financially distressed as he was. I only wish my readers could visualize this tall, raw-boned, poker-faced Nebraskan in a duck blind using that cheap old ten-gauge with black powder and any sized shot from 6's to BB's. (The size shot one uses on game is mostly mental. In the hands of a real shooter who knows distance, anything from 8's to BB's will get your game.) This fellow estimated distances with the uncanny accuracy of a radar beam and his percentage of dead ducks or geese was inspiring. Experience combined with necessity made him the unassuming modest individual I will never forget. I hope the Great Spirit allows him to shoot ducks on the best swamp or flyway of the Happy Hunting Grounds.

Sorry to say it is difficult to teach the majority of slam-bang shooters the technique of thinking when game appears suddenly before them. The tremendous increase in Hunting Safety Courses and correct firearm handling, along with the best of shooting instructions from bona-fide National Rifle Club Instructors throughout the state, is accomplishing a lot but the basic fact still remains each individual has to do his own thinking when afield. A day in the game field soon weeds out the slam-bang artist. Most everyone means well and strives to be a good shot up to a point. But they then seem to forget everything that pertains to being methodical. During the last few years I have noticed this inefficiency and lack of thinking more than ever due to the fact I am retired and have been out with many new friends and members of my shooting classes. The day's hunt starts when a gaudy big cock bird rockets ahead big as a barn door followed by bang-bang-bang! So fast from an automatic or a slide action the reports sound like a Thompson Sub-Machine-gun stuttering. If we were not limited to three

shots and the shotgun was capable of firing six they would all go out in about the same cadence. If the game animal is a rabbit and not a bird the shots come just as fast whether two from a double or three from a repeater, followed by desperate calling of "Here Sport, Here Sport, Heough Heough", in case a beagle is in the crowd. Anxious to get a second try they seek the dog's help and the misses continue.

You ask how does one attain a reasonable amount of skill with the handicaps of expense, lack of recreational opportunities as well as not knowing where to contact suitable instructors?. I agree the game can really create a problem, especially to the person living in a large city. Perhaps the best way is to approach it by asking the dealer you purchase the firearm from whether he can furnish information as to where the nearest N.R.A. Rifle and Pistol Club is located. If he is a live wire dealer interested in making you a regular buyer he should not only be able to follow thru with service but advice as well. Quite a few dealers in Sporting Goods on a large scale are moving out of the cities along the main thoroughfares where they have available skeet and trap ranges for the shot-gunners as well as safe ranges for small-bore and big-bore rifle practice. Like the Super Markets and Bowling Alleys this large scale service to the shooter is getting going in a big way. The dealer who cannot follow thru with constructive advice and service is not worth much to you. Regular Skeet and Trap ranges usually have experienced men who will help you. If there is a military range near, proper contact with the officers in charge will bring results to serious groups of beginners. In fact our military units can be very helpful and their rigid training procedure is the best available for the rifle shooter. Registered Game Farms are expensive but practical for wing shooting. Shooters living on farms and sparsely settled districts fare better than the ones in the cities. Practically unlimited restrictions and opportunities makes it possible for them to develop skill rapidly. It behooves the city cousin to make friends in the country, and above all learn his States forest and stream recreational areas. They are there for that purpose. Be thankful you live in such a State and Nation and do your utmost to cooperate with the Forest and Waters Department as well as the Game Commission.

In conclusion I might add for the benefit of the shooter who is seriously thinking and striving: read the best books you can obtain as well as our excellent magazines; join the N.R.A.; load your own ammunition; hunt the year around on crows, woodchucks and other unprotected species; do some skeet and trap shooting, as much as you can afford; be a safety minded hunter and above all become thoroughly acquainted with firearms you are using. You will feel proud when your friends refer to you as "one shot Ike" or "old Deadeye". Don't get me wrong, there is no crime associated with being a poor game shot and we can legally shoot only a limited amount of game. But there is a definite satisfaction in being able to hit at least 35 to 40% of the game you shoot at. Your hunting companions like to have confidence in your ability. They don't care to be like the pointer canine who looked up to me with that "Oh what's the use?" expression. Being referred to as a "fluke shooter" by your gang is more or less disconcerting when there is little or no reason for it if you will apply just common horse-sense and think. Make it a point to start now and become "The Practical Game Shot" your hunting pals will admire. ■

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DEER & BEAR HARVEST 1959

PENNSYLVANIA GAME COMMISSION

HARRISBURG, PA.

TOTAL - LEGAL ANTLERED DEER	38,270
TOTAL - LEGAL ANTLERLESS DEER	51,902
GRAND TOTAL	90,172
(INCLUDES DEER BY ARCHERS: ANTLERED-427; ANTLERLESS-982)	
TOTAL - LEGAL BEARS	296

A - COUNTY UNKNOWN	11	(included in total)
B - COUNTY UNKNOWN	39	(included in total)

-KEY-

A - LEGAL ANTLERED DEER ..... (By tag count)
B - LEGAL ANTLERLESS DEER ..... (By tag count)
C - LEGAL BEARS ..... (By tag count)

K.L.C.